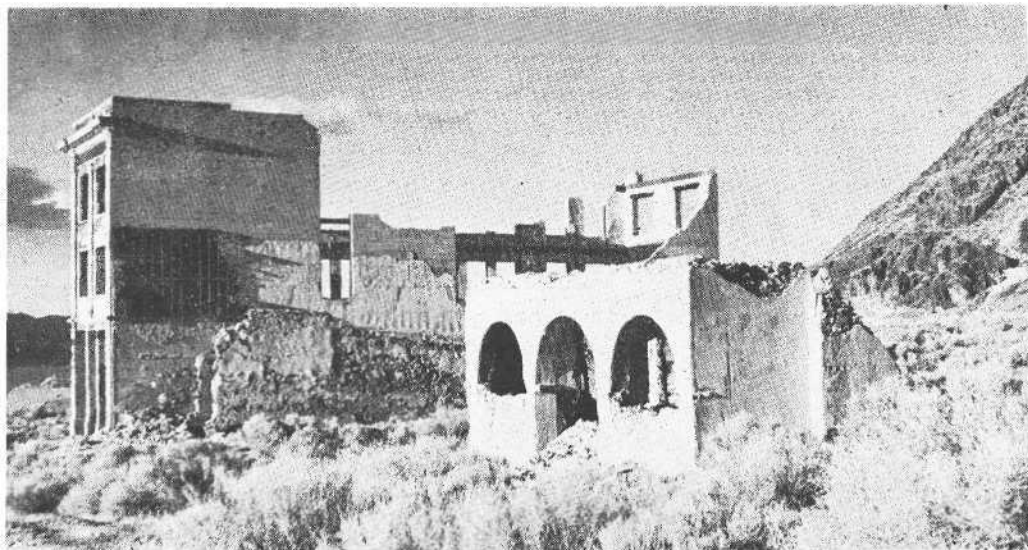


Desert

APRIL, 1956 35 Cents





Rhyolite, Nevada, 1942. John Hilton photo.

DESERT EVENING

By MARGARET HYATT
Clearfield, Utah

The desert sings deep purple chords
To match the evening sky,
With scented winds from canyon fords,
To waft the lullaby.

And over jagged mountain walls
The moon's round lantern looms
To light those shakoed sentinals,
The yuccas' clustered blooms.

• • •

VIGNETTE

By JOSEPHINE HENRY
Santa Ana, California
Cloud swept vistas
Tawny sand
Rainbow spanning
Sky and land.

Star flecked desert
Silent space
Earth reflecting
Heaven's grace.

• • •

LATEST GADGET

By GRACE BARKER WILSON
Kirtland, New Mexico

The fevered search for rare uranium
Has set the great southwestern lands a-hum.
Prospecting parties range on desert hills;
Dispute about conflicting claims now fills
The gossip column and the daily press.
Illegal practice, and ill-timed duress,
Get-rich-quick dreams are driving people
mad.
A geiger counter is the latest fad.

• • •

NOON?

By DARRELL A. TOTTEN
Henderson, Nevada

The desert urges one to think
Of things other than food and drink.
Perhaps its restless sands can tell
Just how each eon's shadow fell.
Man knows so little of the past
Out of which he has come so fast.
For Man the minute is the dye
That marks the hour passing by.
Marking the years we cannot see—
Challenging our credulity—
A desert measures eternity.

EVENING PRIMROSE

By GEORGIA JORDAN
San Bernardino, California

When evening shadows fall, primroses peep
From out a canopy of leafy green,
A daily shade from burning desert sun.
Refreshed by evening air, the buds are seen
Unfolding, giving fragrance to enjoy.
The dainty primrose cheeks of petal white
Are blushing with soft tints of rose,
Awaiting kisses from the starry night.

Escaping from tumultuous city life,
I pause and rest beside the desert bloom.
Enchanted by the evening's haunting charm
And peaceful solitude. The silent loom
Of Spring is weaving on the desert sand
Primroses created by the Master hand.

• • •

DESERT MORN

By O. S. PINCKNEY
Mariposa, California

Awake! and look toward the east
There where Aurora now rolls back the
flaming gates of dawn
And as that rosy portal opens wide, scatters
the shadows
Of the night that's gone.
And as that sun soars up toward Heaven's
dome
Obliterating shadows on its way
The Painter enters with His brush in hand
To paint the glories of a new-born day.
The Sego Lily lifts her dainty head
And, blushing, gazes on that golden sun.
Winds whisper, softly o'er the desert sand.
Awake! Behold! Another day's begun.

Thus Live

By TANYA SOUTH

Let each day be as if it were
The last for you on earth,
With love and kindness to restore,
And all the things of worth
Apportioned proper place and tune.
And you shall find your way
With flowers gayly on it strewn
Each livelong day.

Ghost Town

By PANSY H. POWELL
Salt Lake City, Utah

No stranger's feet should tread these rotting
boards
Nor unknown hands push doors that hang
ajar,
For all the golden past this dead town
hoards
Would vanish at a curious touch. The star
That shines above it sends no searching light
Into deserted corners, which would tell
Where wraiths are crouching as the coming
night
Awakes to the coyote's vesper bell.
Better to leave this old town to its dreams—
Step gently that no sleeping echoes wake;
No spoken word should shake the dusty
beams
That shelter bats and the guardian rattle-
snake.
Here none should enter but the aged few
These weed-grown walks and cobwebbed
homes once knew.

• • •

THE DESERT'S TOUCH

By MIRIAM R. ANDERSON
San Bernardino, California

I long for the desert's breath again, and the
high clear coyote's song,
And the wind in my face and the pattern of
trails as I ride along;
I long for the clean soft sand once more
where mesquite trees bend and blow,
And the stars come awake in the close
friendly sky that only the deserts know.

I long for their healing peace again, for a
quiet brooding hill,
And the purpling haze of the far clear
heights and the range of space they fill
I long for the desert's homing touch, and
the wind and stars and sand,
Yet no matter how far from its trails I may
go, I am still within His Hand.

• • •

PRAIRIE YEARNING

By PEARL RIGGS CROUCH
Ashland, Oregon

Oh, for a tree when my heart yearns out
Over the reaching dryland plain!
The muted murmuring of leaves,
The croon of nesting birds again!

A tree, whose gracious spreading boughs
Give dewy shade from noonday sun;
A tree to chant a vesper hymn
Of gratitude when day is done!

Only a leafy, swaying tree
In slanting veils of summer rain—
My heart would sing with a thousand hopes.
Here on the reaching, dryland plain!

• • •

WHO SETS HIS FOOT UPON THESE HILLS

By MILDRED BREEDLOVE
Las Vegas, Nevada

Who sets his foot upon this desert waste,
And sees the rainbows of these barren hills,
May find the image cannot be erased
By greening springs and snow-banked win-
dow sills.
Who tramps upon this rocky, desert range
For health; for gold; by accident or choice,
Where mountains flaunt a constant color
change,
And only space and solitude have voice—
May find the days grown sweet with desert
air,
Where purple hills become a binding chain.
And wake one day, to find that, unaware,
His heart became a captive to the plain.

DESERT CALENDAR

April 1 — Easter Sunrise Services: The Cross-on-the-Mesa, two miles west of Taos, New Mexico; 22nd Annual Grand Canyon Services; Sand Dunes, Death Valley National Monument, California.

April 1-4—Cochiti, San Felipe, Santo Domingo and various other New Mexican Pueblos, Spring Corn Dances.

April 6-8—Dons Club Travelcade to Petrified Forest and Navajoland, from Phoenix, Arizona.

April 6-8 — Seventh Annual Fiesta and Rodeo, Truth or Consequences, New Mexico.

April 7 — Palm Springs, California, Desert Museum Field Trip to Horseshoe Canyon.

April 7-8—Flower Show, Yuma, Ariz.

April 8-22 — Painting and Sculpture Show, Fine Arts Gallery, Tucson, Arizona.

April 9—Festival Square Dance Jamboree, Tucson, Arizona.

April 9-13 — Desert Caballeros Ride and Las Damas Trek, Wickenburg, Arizona.

April 10-22—Art Show, Desert Weavers and Ceramists, Phoenix, Arizona, Art Center.

April 13-15—Square Dance Festival, Yuma, Arizona.

April 14—Play Day at White Sands National Monument, Alamogordo, New Mexico.

April 14-15 — Sierra Club Hike to Clark Mountain, 32 miles east of Baker, California.

April 14-15—Yuma County Sheriff's Posse Horse Show and Kid's Rodeo, Yuma, Arizona.

April 14-15 — Children's Parade and Fiesta at La Placita, Tucson, Ariz.

April 15—Old Timers' Reunion, Alamogordo, New Mexico.

April 17 — Old Timers' Celebration, Deming, New Mexico.

April 18-19 — Fiesta de las Flores, Tucson, Arizona.

April 18-22 — Yuma County Fair, Yuma, Arizona.

April 19 — Spring Flower Show at Mezona, Mesa, Arizona.

April 19-22 — 20th Annual Desert Circus, Palm Springs, California.

April 21-22—Sierra Club Joshua Tree National Monument, California, outing; camp at Indian Cove campground.

April 21-22—Rabbit Show, Roswell, New Mexico.

April 21-22, 28-29, May 5-6 — Ramona Pageant, Hemet, California.

April 22—Annual Spring Wildflower Festival, Hi Vista east of Lancaster, California.

April 27—Miss Ogden Pageant, Ogden, Utah.

April 28 — Palm Springs, California, Desert Museum Field Trip to Oasis of 49 Palms in Joshua Tree National Monument.

April 28-May 20—22nd Annual Junior Indian Art Show, Museum of Northern Arizona, Flagstaff.

Month of April — Free Spring Art Exhibition at Taos, New Mexico.

Month of April—Special Exhibit of Hopi Kachinas and Old Bultos and Retables—statues and paintings of saints from New Mexico, Southwest Museum, Highland Park, Los Angeles, California.



Volume 19

APRIL, 1956

Number 4

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Photograph by HARRY VROMAN

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RANDALL HENDERSON, Editor
BESS STACY, Business Manager

EUGENE L. CONROTTO, Associate Editor
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Alert and cautious, antelope group investigates the danger at hand. Photograph by Murial Jacobs.

In the Land of the Pronghorn...

Prior to man's westward migration across this continent in the middle of the last century, the antelope was counted in the millions. After the migration was nearly completed and the slaughter-rifles silenced, only a handful of these fleet animals remained. This is the story of what is being done today to correct this man-made near-tragedy, particularly on the Sheldon Antelope Refuge of northwestern Nevada, largest in the nation.

By NELL MURBARGER
Map by Norton Allen

MY FIRST SIGHT of wild pronghorn antelopes came on a summer morning, a number of years ago, while riding through the Massacre Lakes country in northwestern Nevada.

They were standing on a sage-grown flat, not more than a hundred yards away—a dozen small, slender-limbed animals, their gray-tan color blending with the soft colors of the landscape. For the space of two or three breaths I stared at the little band, and the animals stared back at me—every one of them frozen as still as a figure painted on canvas. Their small, neat heads were held proudly erect and I could sense that every stiff hair on their bodies was bristling with alertness.

Suddenly, they whirled, and their white rump flags were bounding off through the sage — great, effortless

bounds that reminded me, somehow, of cascading water, and music.

As my horse started down the dusty trail, I felt as if I had been looking through a tiny peephole into the past. For one fleeting but unforgettable moment I had gazed upon a living symbol of a vanished era — the era of the bison and Redman, of creaking emigrant wagons and long rifles, of bearded giants driving into the sunset, of the antelope.

Since that day, I have encountered other small bands of pronghorns in several Southwestern states. With each band sighted, I have thought of man's belated battle to rescue the antelope from extinction. I have wondered if that effort was proving successful, how the program was being administered and what were its major problems.

For the answers to those questions I went directly to the biggest antelope

reserve in the United States—the Sheldon National Antelope Refuge and the adjacent Charles Sheldon Antelope Range, embracing between them nearly 1000 square miles of territory in the northwest corner of Nevada.

Benjamin Hazeltine, refuge manager, gave me permission to set up housekeeping in an Army tent in the headquarters area. Later, I moved 50 miles across the refuge to sub-headquarters on the old Dufurrena ranch at the mouth of Virgin Valley, where I renewed acquaintance with my friends, Mr. and Mrs. Murial Jacobs.

Murial, a senior employee on the refuge in charge of subheadquarters, has lived around antelopes all his years. He was born just across the state line in the heart of Southern Oregon's pronghorn country. Ben Hazeltine cannot claim as long a personal acquaintance with antelopes for he transferred to Sheldon only five years ago from Fort Peck, Montana, but he has to his credit more than 24 years experience in game management in Montana and North Dakota, which includes some experience in antelope management, and is thoroughly schooled in wildlife conservation.

With two such men to answer my questions, I felt I should be able to learn practically everything there is to know about an antelope, except, possibly, how to speak his language.

Fastest land creature in North America, only a bullet can outspeed the antelope. This fact was proven many times in pioneer days. Photograph by Murial Jacobs.



During my several days at Sheldon I wrote 10,000 words of notes. Most particularly, however, I learned that man's effort to rescue the pronghorn from extinction has been a long uphill struggle—one that is still not won.

Before the white man came, the antelope proved himself capable of surviving any adversity. For centuries the Plains Indians had hunted him for his hide and for food. He had fallen prey to every sort of predator and his ranks had been thinned by periodic storms, drouth and cold. Despite all this his kind had prospered to an extent that almost transcends belief.

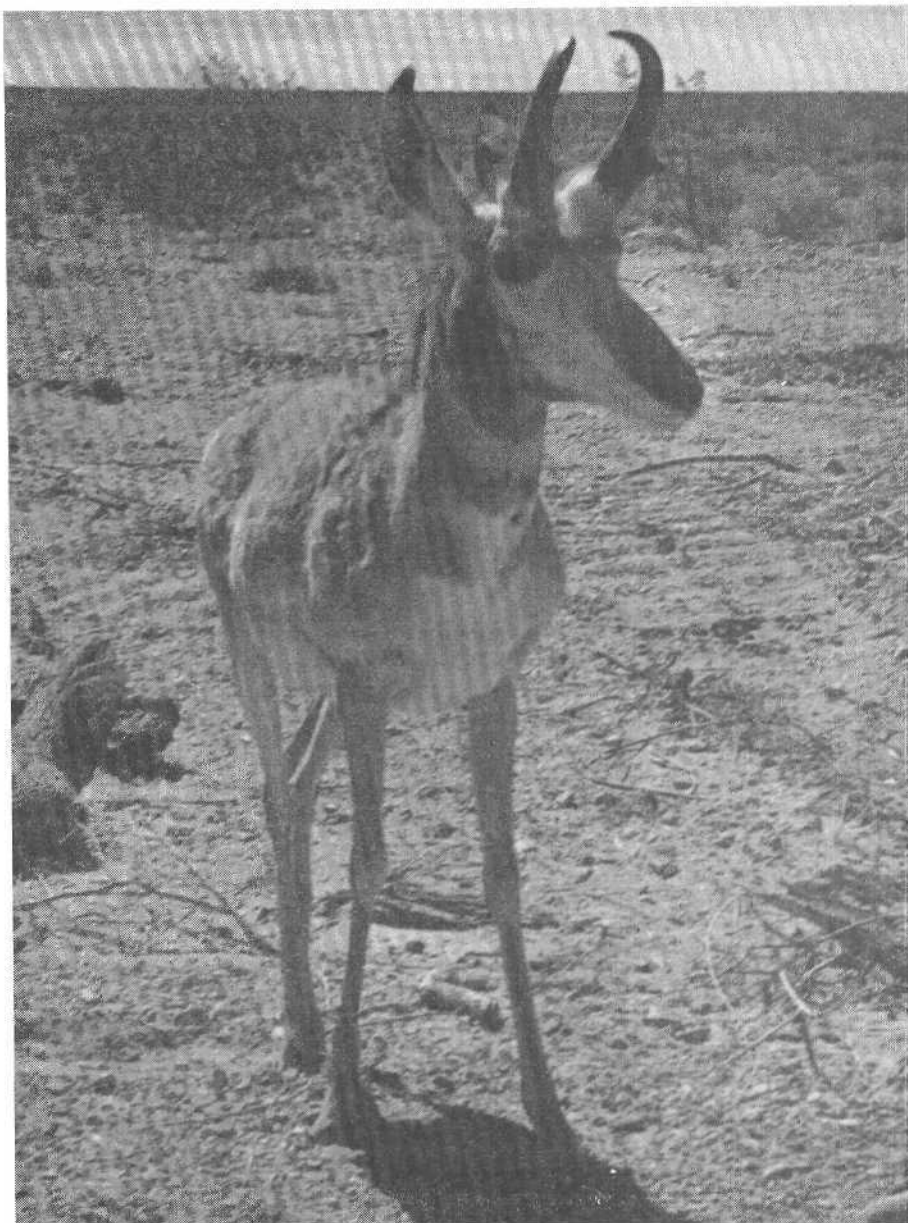
When the white man began his westward march, the Great Plains country from Canada to Central Mexico was ranged by antelopes of incredible number—possibly as many as 40,000,000 of them according to an estimate by the late naturalist-author, Ernest Thompson Seton.

Yet, scarcely 50 years later, that number had dwindled to virtually none—one lone animal, perhaps, where as many as 10,000 formerly had ranged!

It was the old ignoble story of white man's greed and waste, and white man's high-powered rifles. Millions of antelopes were slain by professional hunters employed by railroads, mines, army camps and wagon trains. They slaughtered the species in such frightful quantities that dressed antelope carcasses were offered for sale on the streets of Denver for 25 cents. Many animals fell victims of their own natural inquisitiveness. Curious about the newly-laid railroad tracks, they assembled along the rails in vast bands—there to be struck down and killed by the speeding trains.

Having found co-existence with mankind impossible, the antelope declined along with the buffalo and the passenger pigeon and by the early 1920s the pronghorn population in the United States was estimated at an all-time low of 26,600 animals. Their ranks were reduced to beggarly herds in only seven of the more sparsely-populated states. One of these was Nevada where, in 1924, remained an estimated 4253 antelopes, 80 percent of which were concentrated in the northwestern part of the state.

If immediate steps had not been taken to halt killing of the species and to otherwise conserve and propagate the few remaining animals, it is likely that another five years would have seen the extinction of the pronghorn. These steps, fortunately, were taken not only by the U.S. Department of the Interior, but by state fish and game commissions, sportsmen's groups, the National Association of Audubon Societies, the Boone and Crockett Club, the Order



Male pronghorn antelope. Few people have ever gotten this close to a live male. Photograph by the author.

of the Antelope and other national conservation agencies.

As a result of the combined effort of these organizations, several antelope refuges were established, seed stock was trapped and moved to vacant areas, and legalized killing of the species was prohibited or limited everywhere. After 20 years of such protection, America's antelope herd had climbed back to an estimated 200,000 animals—still less than 5 percent of its one-time strength, but a sizeable gain, nonetheless.

It was during this period that the Audubon Society and Boone and Crockett Club became interested in aiding the cause of the pronghorns in northwestern Nevada, and to that end raised funds with which to purchase all privately-owned lands within the 34,091-acre tract now embraced in Sheldon National Antelope Refuge. These holdings then were donated to

Uncle Sam, and in 1931 the original refuge was established. Five years later this nucleus was materially increased by the establishment of the Charles Sheldon Antelope Range of 548,373 acres bordering the original refuge on three sides.

Although both tracts are under the supervision of Ben Hazeltine, the smaller refuge is managed entirely by the U.S. Fish and Wildlife Service while the larger tract is supervised jointly by the Wildlife Service and the Bureau of Land Management. Both are open to livestock grazing under the permit system, but within the huge area are 151,707 acres reserved for the exclusive use of antelopes—this exclusion maintained by natural topographic features such as canyons and rimrock and by short drift fences.

The need for a refuge in this part of Nevada arose when local stockmen

purchased the area's few springs for the exclusive use of their cattle. Once the area was set aside as a refuge, this problem was eliminated, but the scarcity of water still continues as a major problem.

For the past six years the refuge has conducted a soil and moisture project financed by the Department of the Interior with a special allotment of \$6000 to \$8000 annually. Set up as a long-range program, the work includes additional development of existing springs, building drift fences, installing gully plugs to halt erosion and building small dams. Insofar as possible effort is made to use college students majoring in wildlife management for this work and 8 to 12 young men are employed each summer.

"But even with the work accomplished under this program, water is still a serious problem on the refuge and probably always will be," said Hazeltime. "The only thing that saves us is the fortunate circumstance that antelopes eat snow—and our winters generally are long. As soon as there is an inch of snow on the ground, our water worries are at least partially over until the next spring."

The antelope eats many herbaceous plants, I was told. Both a grazer and a browser, his diet is comprised largely of brush and weeds eaten only in limited quantities by domestic cattle, and

he will thrive and grow fat on range of little use to livestock. One of his favorite delicacies is a species of low-growing yellow primrose which forms a dense carpeting along the shores of alkaline lakes and dry lake beds. Not only in his feeding, but in every phase of his life, the antelope is a creature of habit. He follows the same trails year after year and the does drop their kids on the same mesas and flats.

"Sometime," said Murial Jacobs, "habit leads to his downfall. Near Hart Mountain refuge in Southern Oregon was a small dry flat known as Guano Lake. Migrating antelopes for years had followed a trail across this dry lake bed—consequently, once they found a thin sheet of water covering the flat but didn't detour. Instead they headed boldly across the lake. The result was that nearly 150 animals became bogged in the mud and died before anyone discovered them . . ."

Biologically, the pronghorn is restricted to Western North America and has no near relatives among the antelopes of the world. He is a small animal, about 40 inches high at the shoulder and mature bucks have an average live weight of 100 to 125 pounds. Does breed in their second year and the kids are dropped in May—the entire year's crop in a period of two weeks, or less. In choosing a birthplace for their young, the does gener-

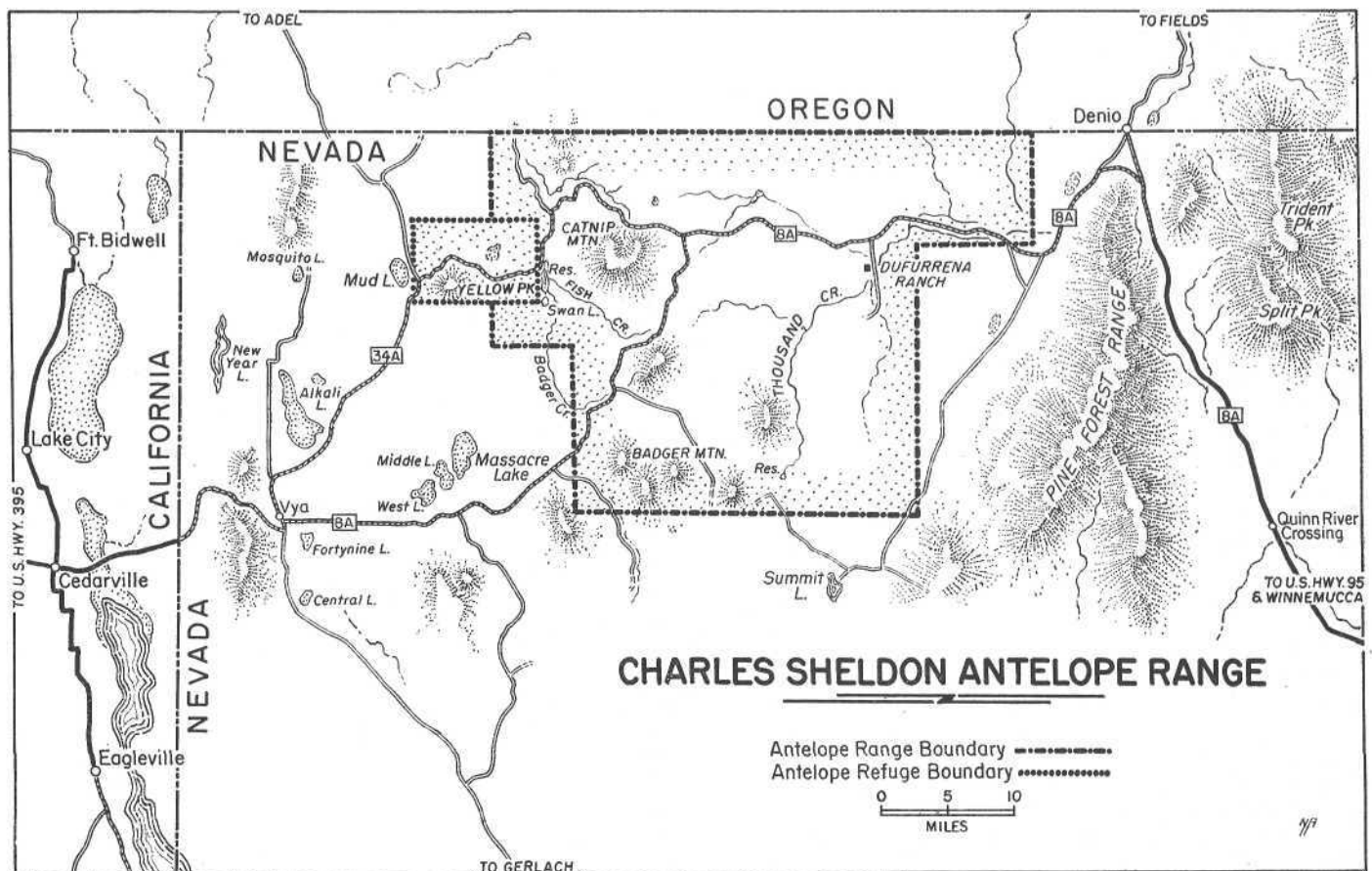
ally select a site on the open plains, less than two miles from water and where the vegetation is not more than a foot high. Sites grown to the short sage, *Artemisia nova*, are especially favored, said Hazeltime. The kids, which come in pairs three out of four times, weigh from 4 to 10 pounds at birth.

"They're mostly legs and appetite," said Jacobs. "But don't think they can't use those legs!"

Three day old kids can run faster than a man; at 10 days, they can outdistance a fast dog; and a few days after that, not much less than a bullet can overtake them.

"They are tough little rascals, too," said Hazeltime. "During the first week of kidding this year many were born and thrived during cold, hard winds that thoroughly chilled we well-clothed observers. The second week three storms brought snow, hail and rain with no noticeable detrimental effects on the kids."

For the first few days of their lives the youngsters are left cached in the sage by the mother who returns about every three hours to let them nurse and enjoy a brief romp. Soon they are big enough to tag at her heels; and by the first of September, when the rutting season usually begins, they are ready to wean—an operation in which the bucks help the does by butting the



young and chasing them away from their hitherto reliable milk supply.

Each buck usually has a harem of three or four does, but sometimes as many as seven or eight. They sometimes find it necessary to fight for their harems, which they do by butting their heads together and battling viciously. Such duels occasionally end in death.

"Sometimes," said Murial, "we find carcasses and skeletons of bucks with their horns locked or the prong of one buck is driven into the jawbone of another with such force that it is impossible for the combatants to separate themselves, and both die . . ."

At close of the rutting season, the male antelope sheds his horns by a process quite different from that of deer. A new skin begins to grow over the core of the old horn and slowly pushes off the hard, outer shell. Thickening and hardening at the tip, this new skin gradually grows downward during the winter and following spring and by July the old core is completely resheathed. While both does and bucks have horns, those of the doe are limited to straight, smoothly-tapered prongs, rarely longer than the animal's ears. Buck horns, on the other hand, may be as long as 15 inches, are generally forked at the tip and curve inward.

Ever alert and wary, the little beasts are most apt to be glimpsed while making their departure, in which position their distinguishing characteristic are their "flags" or rump patches of stiff white hair. In time of fancied



Ben Hazeltine, manager of the Sheldon National Antelope Refuge.

danger these hairs are raised like the hackles on a dog's neck producing two chrysanthemum-like rosettes. So conspicuous are these patches they may

be seen with the unaided eye for two miles. Unless closely pursued, the antelope generally stops before he has run more than a few hundred yards. Having halted, he turns to face the pursuer and as he does the rump patch vanishes from view—and with it vanishes the sight of the antelope.

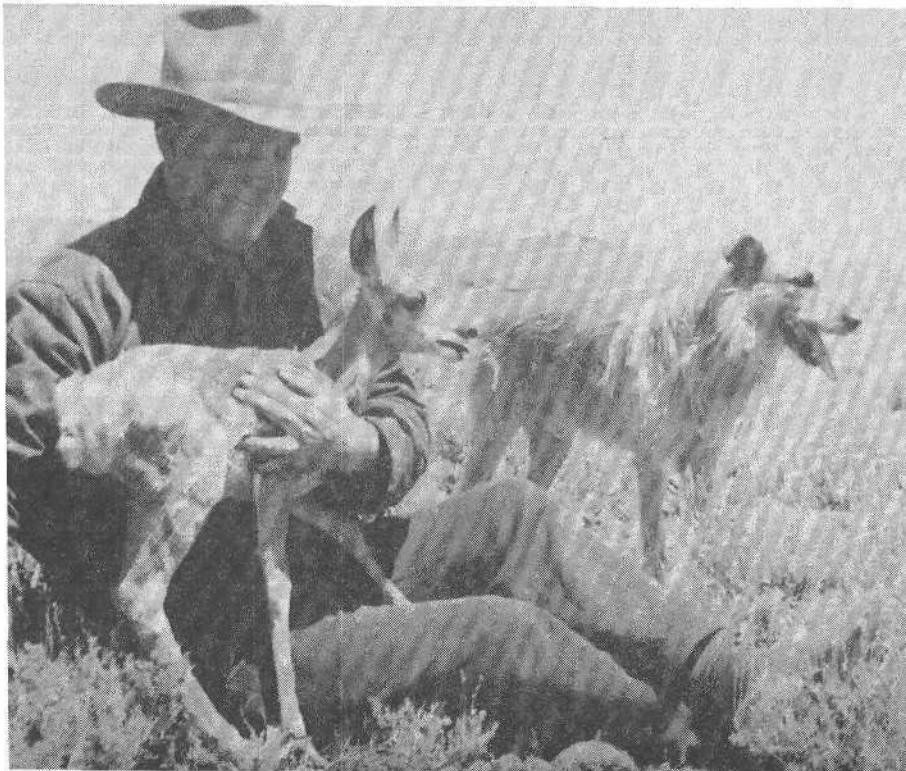
The pronghorn, incidentally, is the most fleet-footed of all North American animals and only the African cheetah is regarded as faster. It has been said that the adult antelope can run 70 miles an hour, but 40 to 45 m.p.h. is their average good speed, according to the men at Sheldon.

"They like to race cars and will run parallel to the highway for miles," said Murial. "They don't seem to feel they have won the race fairly until they have crossed over the road in front of the car. Then they run out into the sage a little way and stop and look back—almost as if they were laughing at you!"

Although able to bound great distances, the antelope will rarely jump over an obstacle if he can figure any possible way to go under or around it.

"Once I was driving along a road in the late afternoon and shadows of a line of telephone poles were lying across the road," continued Murial. "An antelope started running down the

Murial Jacobs holds an antelope kid. Photographs by the author.





Headquarters of the Charles Sheldon Antelope Range and Sheldon National Antelope Refuge. Photograph by the author.

road ahead of me. Every time he came to a telephone-pole shadow he leaped high in the air to clear it—high enough to have carried him over any fence in the country. Yet, if he had come to a fence, he probably would have knuckled down and crawled under it!”

Unless raised in captivity from kid days, an antelope rarely becomes friendly with people and almost never ventures close to an occupied house or yard, said Hazeltine.

“They are different than deer in this respect,” he pointed out. “For the past several summers a doe deer has raised her twin fawns around the yard here at headquarters and has used our little patch of lawn and shrubbery as her special browsing grounds. But antelopes never let themselves forget that they are wild animals . . .”

Possibly this inherent distrust of man is responsible for the strange situation in which game management authorities find their herds today. With assured feed and water and more than half a million acres set aside for their protection, Nevada’s pronghorns, theoretically, have never had it so good; thus it came to me as somewhat of a shock to learn that the herd is not prospering.

Why? Nobody knows.

Predators, it seems, are not the answer, since the refuge has few coyotes or bobcats and maintains a good program of predator control. The loss to poachers is relatively small. There is loss each year to legalized hunting outside the refuge boundaries. There are incidental losses to winter kill, prolonged cold spells and periods of drouth, but as this is traditional antelope country these losses should be no greater than they have been since prehistoric times.

Yet, even under rigid protection, it is believed that not more than 15 to 25 percent of the antelope kids born at Sheldon reach maturity, and after 20-odd years of refuge status, the Sheldon herd is barely holding its own in number. In 1924 there were an estimated 3700 pronghorns on the lands later included in the refuge; 1945 found this number shriveled to an all-time low of 1500 animals, and the present antelope population is set at around 2500. Why this situation should prevail in Nevada and Oregon when antelope in Wyoming, for example, have increased in 50 years from an estimated 4000 to some 65,000 animals despite heavy annual hunting and several severe winters that claimed terrific toll—is something that conservation men of four states are still striving to learn.

Study of the problem has been hampered by the fact that antelopes are inveterate wanderers. Oregon-born antelopes migrate into Nevada and Nevada-born antelopes go to Oregon—all for no readily apparent reason, since feed and climatic factors are almost identical in both states. As a means of coordinating the study and investigation of antelope kid losses in Northern California, Oregon and Nevada, game management men a few years ago formed the Tri-State Antelope Group, which has since been joined by Idaho. In 1954, managers of the Sheldon and Hart Mountain refuges submitted a plan for tagging new-born antelope kids as a possible means of gaining some concrete information on migratory trends and other casualty factors. The plan was approved, and during that first summer 98 kids were tagged by personnel of the two refuges

and fish and game departments of California, Oregon and Nevada.

Long experience in trapping antelope kids for transplants, zoos and parks, had given Murial Jacobs a knowledge of this work that proved invaluable in training personnel, and the tagging operation at Sheldon — both during 1954 and the expanded program of 1955—was conducted under his supervision.

After an antelope kid is three or four days old he has become so fleet footed there is little chance of catching him without inflicting possible injury to the animal. For this reason, the tagging operation is necessarily limited to newborn kids—and finding uranium is simple compared to locating a well-camouflaged kid that an antelope doe has cached in the sagebrush.

About the only way the tagging crew can find the kids is to follow the mothers when they return to feed them. Once a kid has been spotted by means of binoculars, a member of the tagging crew approaches the spot with a long-handled net similar to the dip nets of fishermen. If the kid runs—as he is almost certain to do if more than a day or two old—the field man completes the last few yards of his stalking on a fast sprint and drops the net over the leggy little animal before he has time to get into full stride. The kid is ear-marked with small, metal disks and doe-kids also by ear cropping, and is returned to the nest.

Before start of the project there was some speculation that does would not acknowledge their kids after the young had been handled and tagged. Follow-up observations have shown, however, that after a preliminary period of sniffing the does invariably accept their tagged youngsters and permit them to nurse.

If out of the tagging there comes even one clue to the stagnant or diminishing antelope population problem, game men of the four states feel the work will have been worthwhile.

Although the primary problems of the refuge are those bearing directly on antelope husbandry, there are other problems as well. For one, the problem of distance. From the headquarters area it is nearly 50 miles to the nearest postoffice and point of supply at Cedarville, California; while a visit to the county seat at Reno entails a round-trip drive of more than 500 miles. Such a journey involves considerable time and gasoline and in winter the situation becomes much more complicated.

Summers at Sheldon are short, par-

ticularly at headquarters which is at 6500 feet elevation, and only 10 miles south of the Oregon line. Night temperatures in May have been known to drop to 7 degrees Fahrenheit and during the month of June, 1954, there were 14 nights of below-freezing temperatures, with a low of 20 degrees. During that same year, snow or sleet fell on the refuge four times in June and twice in August. I camped on the shore of Catnip Lake in 1954 and each morning found the top of my car heavily coated with hoar frost.

"But between storms," said Hazel-tine cheerfully, "there are a few days in each month when the weather is quite pleasant."

In addition to its antelope population, the Sheldon range and refuge also is the home of many mule deer, an estimated 10,000 sage grouse, and 1000 Hungarian partridges. Ponds at

Dufurrena sub-headquarters provide a nesting ground for Canada geese and several species of ducks and during periods of migration, these ponds as well as Catnip reservoir are visited by large numbers of waterfowl. Observations have disclosed 145 species of birds resident or transient on the reservation and even this considerable list is known to be incomplete in the field of songbirds.

But, first and foremost, the refuge is dedicated to the welfare of the pronghorn antelope, and I am convinced that the two men charged with administering that program are devoted to their task, heart and soul. After talking with Ben Hazel-tine I came away with the impression that there must be something about antelopes that mesmerizes a man—like gold mining or hunting opals. And after I had spent a couple of days with Murial and Mrs.

Jacobs, I was more than ever convinced that this was so.

The Jacobs have lived on the refuge for the past 13 years—Murial having served three years as acting manager, and the remaining 10 years as refuge maintenance foreman in charge of sub-headquarters.

One afternoon while visiting Mrs. Jacobs, she mentioned that Murial would soon reach the age of retirement.

"After that," she said, "we don't know for sure what we'll do. I'd like to get a small trailer and travel around the country and hunt rocks. But Mr. Jacobs doesn't care much for rocks or traveling, and he definitely dislikes trailers . . ."

I laughed. "What does he like?"

Mrs. Jacobs looked at me in astonishment. "Is it possible you haven't guessed by this time?" she asked. "Mr. Jacobs likes antelopes!"

Prospects for Wildflower Display Dimmed . . .

Wildflower observers from the far corners of the Desert Southwest are not optimistic over the spring display. The forces of Nature that combine to paint the desert with colorful blossoms seem not to have gotten together in the right amounts nor at the right times this year.

Only from Arizona come encouraging reports. Leland J. Abel, archeologist at the Casa Grande National Monument writes from Coolidge, Arizona, that 1.48 inches of rain has fallen in four different showers since his last report, and "the outlook for a good showing of desert flowers has changed completely. We now expect a very good display, starting about the middle of April and lasting through the month of May."

From the Saguaro National Monument at Tucson, Arizona, John G. Lewis reports that these same showers will provide a good display of spring flowers. But, he adds, the weather has turned somewhat colder and this may slow down the blossoming to a great extent. Lewis believes, however, that Southern Arizona's wildflower display will be better than average.

The prospects for a good wildflower display in the Joshua Tree National Monument in California continue to be poor, reports Bruce W. Black, park naturalist. The scarcity of rain—only .47 inches in January and February—accounts for this prediction, but perennials and other individual species should bloom along with the Bigelow

Cholla cactus in the Pinto Basin, and Calico Cactus, which is widely distributed in the Monument. Black adds that the ocotillo in Pinto Basin may come into bloom in April.

Mary Beal of Daggett, California, states that there are only a few one-inch-high plants scattered about the desert. Another good rain is needed to bring them into good bloom. The prospects for a good display are somewhat better on the higher mountain slopes in the Daggett vicinity, but here too more rain and warmer weather are needed, she believes.

"The Antelope Valley desert country is very dry," writes Mrs. Jane Pinheiro of Lancaster, California. Mrs. Pinheiro reports a few brodiaea and wild onion shoots are showing south of Palmdale and in the Rosamond area; a few Golden Poppy plants were found in the Fairmont and Quartz Hill areas; and quite a few mariposa plants, which usually do not bloom until May and June, have been found.

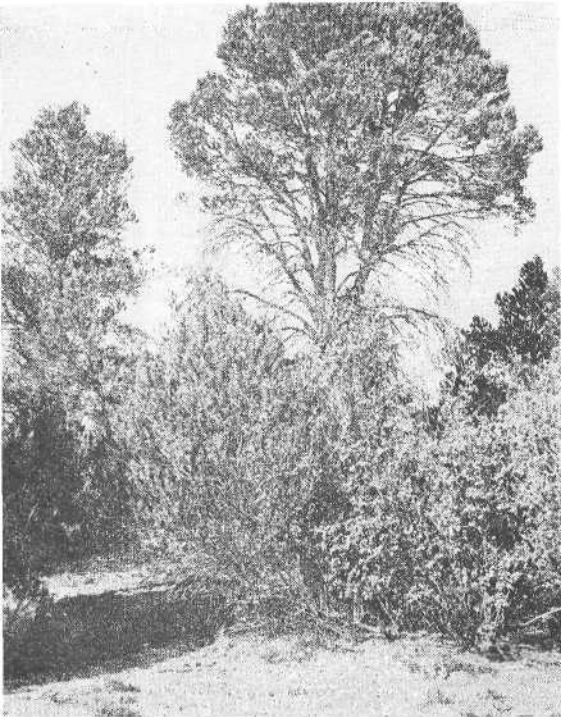
Unless more rain falls in the Borrego State Park of California area, Park Supervisor William J. Reinhardt believes the wildflowers there will make a very poor showing. "We have noted a few desert dandelion, desert lily, aster, verbena, chuperosa, indigo-bush, encelia and desert lavender—but not in any great amounts," Reinhardt said.

Ground conditions in the Lake Mead National Recreation Area are very dry, writes Park Naturalist O. L. Wallis from Boulder City, Nevada. "Subse-

quent rains may help to improve this condition considerably at our higher elevation where flowers bloom much later. The golden brittlebushes are already making a colorful showing down along the Colorado River and Lake Mohave. The massive displays of annuals can hardly be expected to be very spectacular this season."

Prospects for flowers in Death Valley National Monument, California, are still very unfavorable, reports Superintendent Fred W. Binnewies. He believes there will be some phacelia, five-spot, primrose and ghost-flower in bloom at higher elevations, probably during the latter part of April, but he does not expect flowers of any consequence on the floor of the Valley.

On the Colorado Desert—Coachella and Imperial Valleys—little rain has fallen this winter and it is not likely any wildflowers will appear except in borrowpits and roadside strips where there was a bit of runoff from the paved surfaces. The most brilliant showing of wildflowers—when there is rain—are the verbenas and evening primrose which grow on the sand dunes, but this year so far the dunes have produced hardly a sprout. Of course the perennials—cactus, encelia and chuperosa—which send forth some blossoms each year despite the absence of rain, will provide the desert with some color. And this also will be true of Palo Verde in May and Smoke Tree in June.



Parry Pinyon growing on the shrub-covered flats just below the U.S.-Mexico border.

IN 1832 Dr. George Engelmann, a German physician and talented botanist, came to America to explore the then little known Mississippi Valley. He settled in St. Louis and there set up medical practice and soon afterwards began the wide botanical travels that brought him fame as a botanist.

His intelligent and long continued interest in American plants led to the publication of at least 112 scientific papers dealing primarily with cacti, yuccas, agaves, oaks and cone-bearing trees. Some especially beautiful illustrations are to be found in his famous book on Cacti of the Boundary, written while he was associated with the Missouri Botanical Gardens.

Among Engelmann's descriptions of Southwestern pines is the rare and superbly beautiful four-leaved Pinyon, *Pinus Parryae*, named in honor of Engelmann's good and much respected botanist-friend Dr. Charles C. Parry, who, like Engelmann, did so much to acquaint plant-lovers with western desert and mountain plant varieties.

This rarest of all pinyons is known to occur as far north in Southern California as Thomas Mountain near Mt. San Jacinto, but the greater number and finest specimens are found in the wild and botanically little-explored mountains of upper Baja California, especially in the Sierra Juarez, a spectacular ridge of plateau-like highlands dropping steeply to the Mexican portion of the lower Colorado Desert, and in the nearby Sierra San Pedro Martir, especially on those slopes facing the Gulf of California.

ON DESERT TRAILS WITH A NATURALIST - XXIV

The Rarest Pinyon

Lending itself perfectly to the quietude and peacefulness of the high desert mountain country of Baja California is the Parry Pinyon, rarest of all pinyon trees and a highly esteemed member of the Southwest botanical family.

By EDMUND C. JAEGER, D.Sc.
Curator of Plants
Riverside Municipal Museum
Photograph by the author
Sketch by Lloyd Mason Smith

The younger trees are generally round or peaked-topped and usually quite symmetrical, but the older trees are often grotesque, though beautiful in form with wide-reaching branches accentuating the strangeness of the trees' shapes. Older specimens, and there are many of them, may be 400 to 500 years of age—this I know from counting the growth rings on several large, freshly cut stumps. The fact that these basal stumps were only about two and one-half feet in diameter indicates how very slowly these pinyons of the arid desert mountain highlands must grow.

It is from among Mexican forests of the Parry Pinyon that one looks down the steep-walled face of the Sierra Juarez to hidden groves of Washingtonia Palms of the Tajo and other canyons; or outward across the Laguna Salada and the Lower Colorado Desert to the placid blue waters of the Gulf of California. It is up these precipitous slopes that the Cocopah Indians made their way over ancient trails to gather pinyon nuts in late September and October. To this very day small parties of these Indians travel over round-about roads by auto to harvest the nuts and in many places one can still come upon heaps of empty cones, discarded after the nuts had been extracted.

The Parry Pinyon is sometimes called the quadrifolia or four-needed pinyon because of its peculiarity among nut pines in having four needles in each leaf-bundle. The common Pinyon of Utah, Nevada and California (*Pinus monophylla*) has the needles occurring singly, whereas the more common nut pine of Arizona and New Mexico (*Pinus edulis*) has two needles to the bundle and the Mexican nut pine (*Pinus cembroides*) has three.

Recently an effort was made to utilize the sap bled from pinyons to make turpentine and other allied products. I hope the day is far away when the beautiful forests of the Parry Pinyon of Baja California become the object of commercial exploitation.

I have spent many spring, summer and autumn days in the sun-drenched open Parry pinyon forests and what glorious and truly wonderful days they were! And if the moon was full, still more wonderful were the nights! There is a peacefulness and a calmness and a clarity of atmosphere there that can be found in few other places. Among all the many and varied camp-sites in Baja California and in our Southwest, I shall treasure most those made deep in the Parry pinyon wilderness.

Cone and four-needed leaf bundle, distinguishing characteristic of the Parry Pinyon.



The story of Jerome, Arizona, is the story of countless other mining towns in the West—prosperity while the mines and mills were operating, but when they shut down—adversity. Jerome is unique, however, in the fact that its “death” was fairly recent—in 1952—and there is still a handful of old timers around who cling to the hope that some day, somehow, Jerome will come back.

Ghost City on Mingus Mountain..

By GROVER BRINKMAN
Photographs by the author

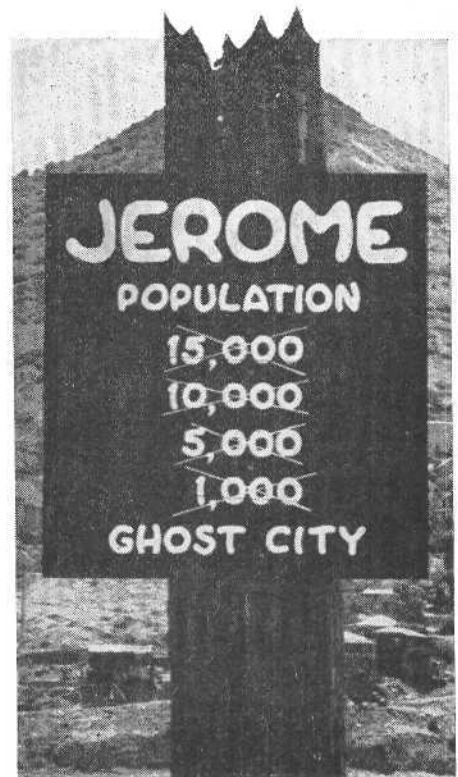
JEROME, ARIZONA—a one-time booming mining metropolis sprawled on the side of Mingus Mountain, wants it distinctly understood that it is the only real “ghost city” in the United States.

There are dozens of ghost towns, the remaining Jeromites admit, not only in the West, but scattered all over the country. But Jerome is the only bonafide ghost city, they persist.

That word “city” is important. The

handful of residents still left in Jerome serve notice to the world that they are in a class by themselves. Not everyone can live in a ghost city!

Jerome once had more than 15,000 inhabitants. It was one of the fabulous boom sites of the west and in its heyday, two mining operators alone took out more than 600 million dollars' worth of copper ore, not to mention the gold and silver. Underneath the city today are more than 85 miles of twisting mine tunnels. Other smaller operators took out millions more, of which no complete records are avail-

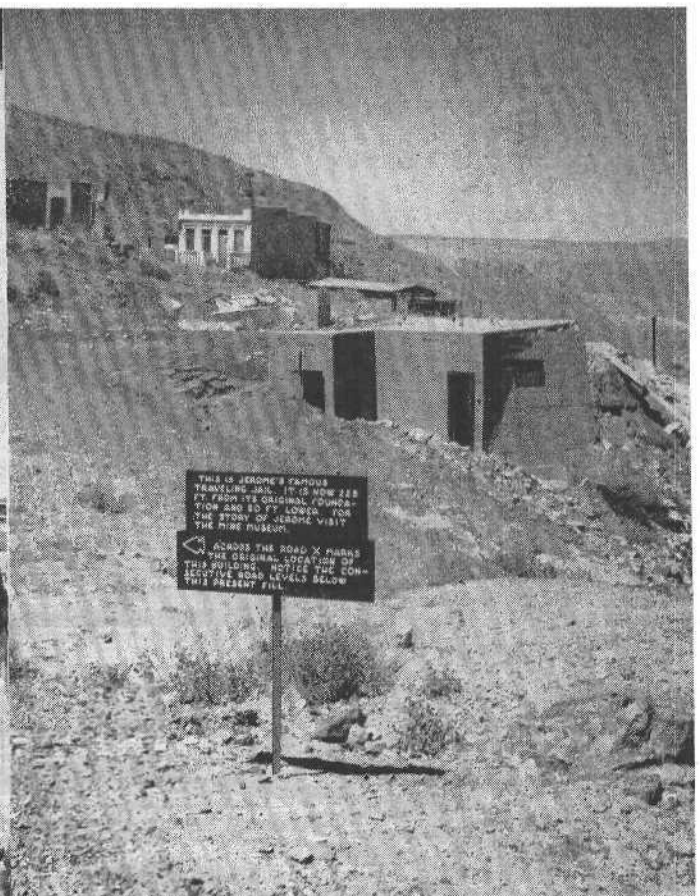


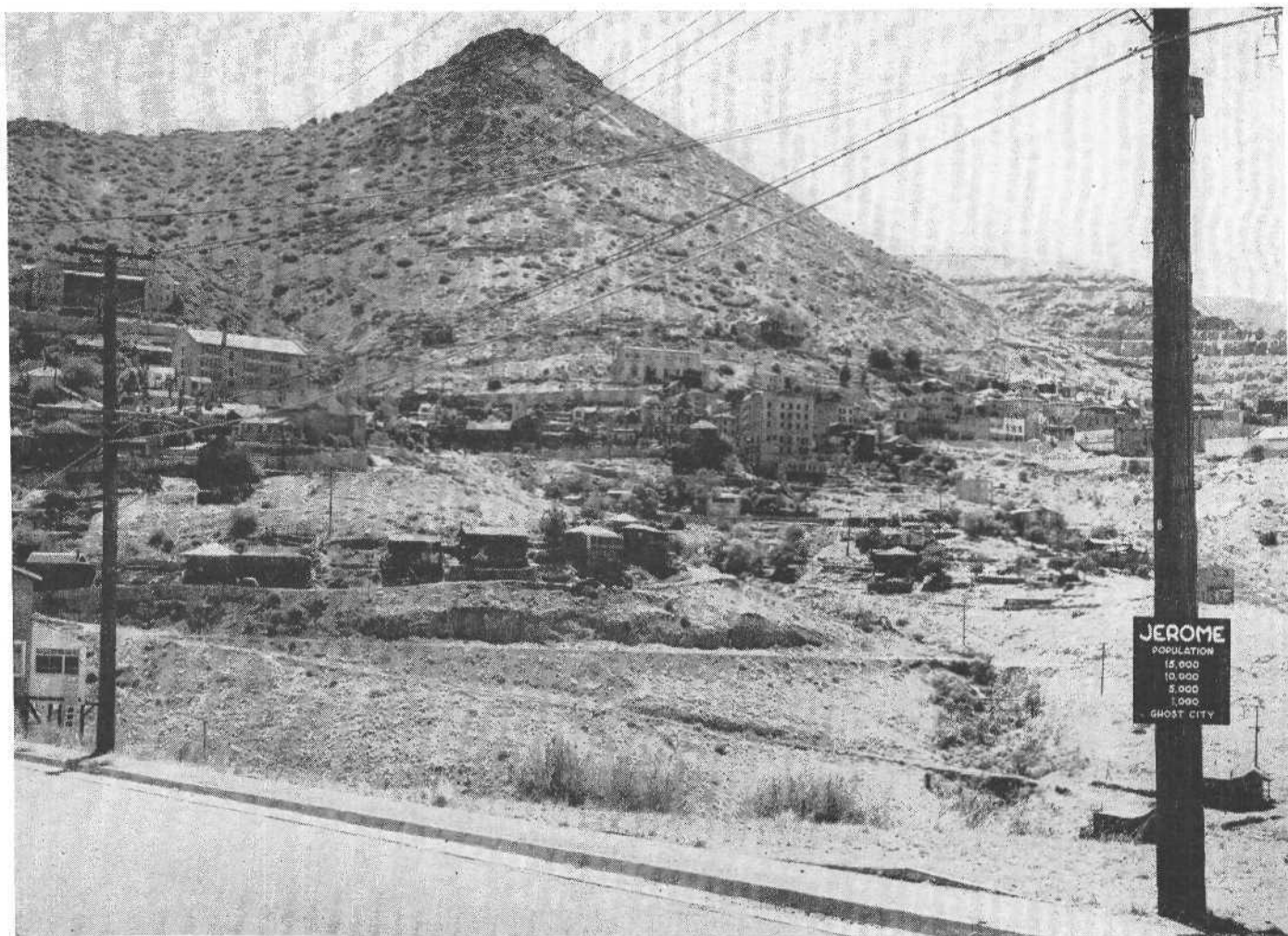
able. Then in 1952 the bread-winner, the Phelps-Dodge mine, closed.

Jeromites thought at first that it was only a temporary closing, but

Pop Clanton, a resident of Jerome and one of the few old-time prospectors left in the Southwest.

Jerome's famous sliding jail which has moved 225 feet down the mountain from its original site.





Jerome is now a city of vacant buildings. Mingus Mountain rises in the background.

Phelps-Dodge emphasized that the shut down was permanent. Jeromites still refused to believe, however, that the ultra-rich ore body that made their city so fabulously rich could have an ending. There must be new veins somewhere. Someone would uncover another bonanza—or someone would discover a new metallurgical process that would make low-grade mining profitable. There was still a lot of low-grade ore available. To all of which Phelps-Dodge men said no.

Jerome was through. No payroll. No economic excuse for existence. Just a lot of buildings, residential and business and a new high school all clinging to the side of a red mountain.

There were other problems, too. Part of the city was slipping down the hill, despite all attempts to stop it. For a time there was panic, and rumors that the entire town was so undermined that it might go hurtling into the valley below at any moment.

These rumors, of course, were largely ungrounded. There had been some slippage, a heavy blast in one of the mining tunnels and a peculiar earth fault combined to cause the panic. The city jail and several other buildings started sliding downhill, first

slowly, then at an accelerated pace. When the slide finally stopped, the jail was across the street in a new location.

The press picked up this yarn and soon Jerome was labeled "the town that was sliding off the side of a mountain." But such is not the case. Most of Jerome, though perched precariously on the steep slopes of Mingus Mountain, is actually anchored in solid rock.

The handful of people who still live in the city are there for a distinct purpose. They have formed the Jerome Historical Society and one of the first actions of this group was to proclaim to the press that Jerome was "America's newest and largest ghost city."

The society adopted a mascot, a mythical Luke the Spook, who was labeled as a second cousin of Kilroy. A historical museum was set up in the plaza, to tell people of the past glories of Jerome. Visitors may tour the fabulous mines, displays of the ore that made it famous, even the machinery that mined it. Jerome has a Chinese restaurant, and an old-west tavern that emphasizes the Mexican and Spanish influence of its past.

And Jerome has "Pop" Clanton, a

typical old-time prospector, who still wears his six-gun, a belt full of .45s, has his burros, pack-train, dutch ovens, shovels and all. His tales of the rigors of wandering the desert in search of gold are as genuine as the frontier Colt slung at his ample waist.

"You can still pan gold in the creeks," Pop says, and produces a small bag of dust to prove his claim. "You won't get rich," he adds, "but it's there—if you work for it, just as we did, back in the 80s."

Today's tourist dollars will never bring to Jerome a bonanza equal to its heyday past. But Jerome as a ghost city is certain to be here for quite some time. There are low rents in the many vacant houses—a haven for writers and artists. And there is plenty to write about, and put on canvas, in this picturesque city of the 1900 era.

The ghosts of Jerome, some say, are real. One has but to prowl through its cemetery or the vacant streets—or hear from the lips of old-timers the glories and violences of its past, to make these stories all the more dramatic.

But don't ever tell a present-day Jeromite that he lives in a ghost town. **A** ghost city, please!

Serpentine Miners of Salt Creek Canyon . . .

The treasure at the end of this rainbow is serpentine—tons of it—ready to be cut and polished into handsome bookends and ashtrays, but even experienced mountain drivers hesitate to drive the road hacked out of the side of Ash Creek Canyon to the Jacquays asbestos mine.

By JAY ELLIS RANSOM
Photographs by the author
Map by Norton Allen

STANDING ON THE sheer cliff shelf of the D. W. Jacquays asbestos mine road overlooking the awe-inspiring gorge of Arizona's Salt River, I marveled at how far men will penetrate into the wilderness in search of mineable wealth. All about me great chasms and flat-topped mesas stretched into the distance. Ash Creek canyon lay at my feet, the tremendous slash of the Salt River gorge bisected the land to the north and west, and Cibique Creek tumbled down from the far side, impassable to man or burro. Along the perpendicular faces of red cliffs jutting into space only an eagle or a hawk drifted past.

Along a narrow-gauge mine track extending from an adit in the cliff face came an ore car loaded with chrysotile asbestos — long, yielding fibers which old timers called cotton rock. From its resting place in the Mescal limestone through countless centuries, this fabulous raw material for brake linings, clutch plates and fireproof garments was starting the first leg of its long journey into commerce. Dark-faced Apache Indians, solemn and deliberate in their movements, pushed the ore car. Miners along the Salt River are nearly all from the nearby Fort Apache Reservation.



At the Jacquays asbestos mine, Jay Ransom Sr. (right) and Frank Vatter (left) discuss the difficulties of mining in this area with one of the workmen. Most of the miners are Apache Indians.

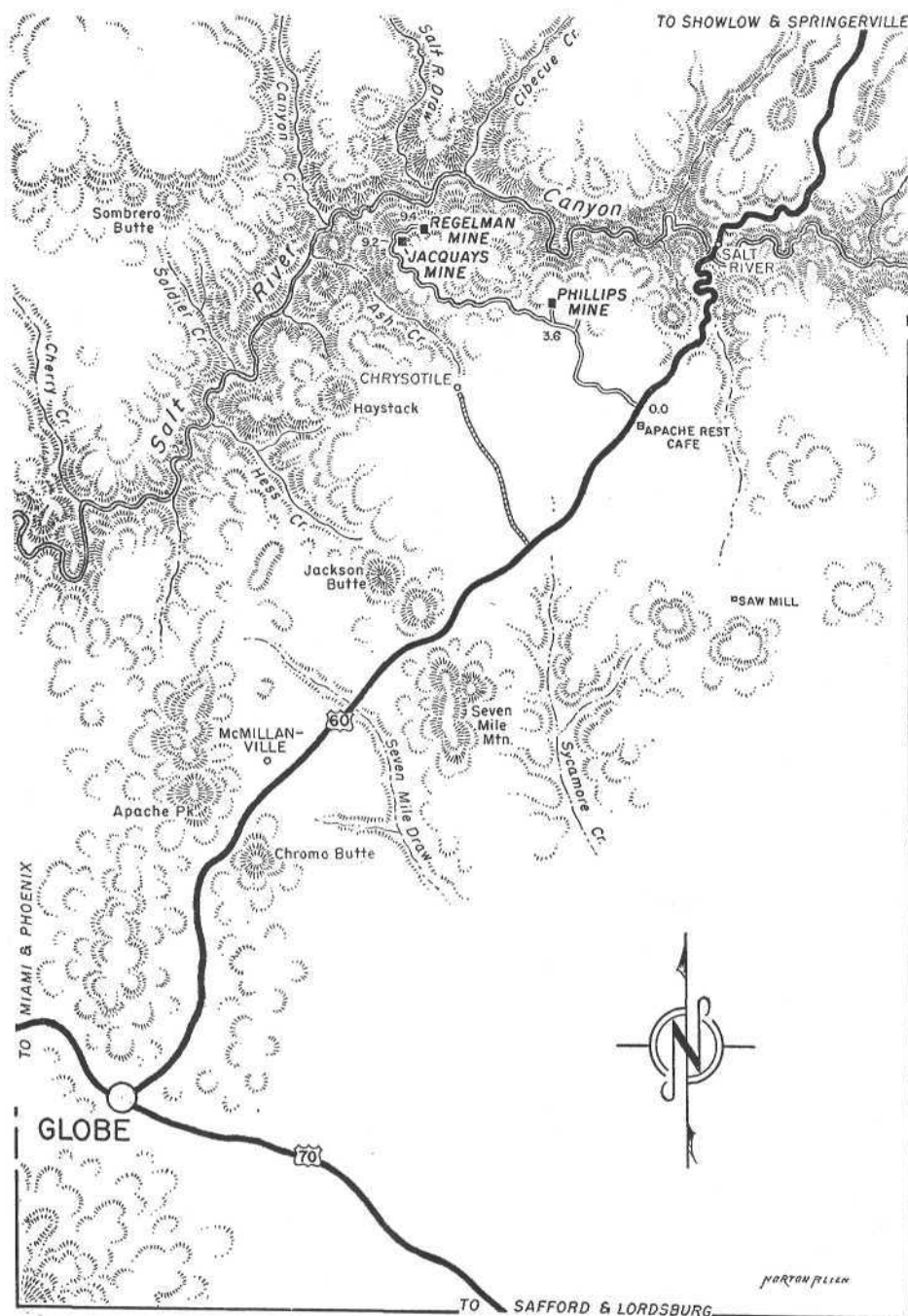
Like pale emeralds shining in the noon sun, chunks of asbestos and serpentine trickled from the steel car—serpentine that had the look and feel of nephrite jade. It was serpentine of gem stone quality that, I considered happily, could be sawed and polished into wonderfully attractive bookends, ash trays and other stone doodads loved by rock collectors.

What interested my father and me, touring Arizona's back country looking for minerals, is that serpentine deposits often yield two prize jade minerals, nephrite and jadeite. Both are intimately related to asbestos. We wanted both kinds, naturally, but were willing to settle for serpentine itself if of good enough quality. All about us rose enormous green and white cliffs streaked with thick veins of emerald-green mineral intruded by seams of

diabase which somehow convert serpentine into asbestos.

The term serpentine refers to several members of a group of closely related magnesium-rich minerals. It is a hydrous magnesium silicate, a secondary mineral resulting from a hot water alteration of much harder magnesium silicates. Chrysotile asbestos, found only in serpentine, was the lure which brought prospectors and miners up the rugged Salt River canyon during World War I. It is the same asbestos that today accounts for renewed prosperity in central Arizona where adits are being extended, old mines reopened, and new outcroppings prospected.

And there, above the gleaming Salt River, a distant thread of silver bright in the sunshine, we found serpentine, gem quality in its jade-like texture and color, in such enormous quantities that



tion. A chill wind worried the tops of the pines, sighing mournfully. In the far distances, over blue-black mesas, storm clouds mustered their forces. But for us the music of the wind in the trees invited us as nothing else can do to men of the outdoors, and a smiling sun made all the world a delightful place to live in.

A quarter mile north of the Apache Rest Cafe a dirt road leading westerly is modestly marked with a crude wooden arrow—"Phillips Mine." We had by-passed the turnoff to Chrysotile, because of deep snow. During the 1930s, Chrysotile employed 500 Apache miners. They and their families comprised the largest asbestos community in America—a regular city with school, church and postoffice, now entirely abandoned. There are enormous serpentine dumps there, at the head of Ash Creek, in which one might conceivably discover jade mineral specimens.

The dirt road to the Phillips mine is narrow and winding, but well maintained. Turn-outs appeared at intervals to permit asbestos ore trucks to pass one another. As we climbed, the rolling plateau lifted into the distance, visible when the road broke out of the forest across the sheer face of a mighty bluff. In the depths of canyons we saw thin nervous tendrils of roads descending hair-thin toward other mines.

Four miles from the main highway we entered the Apache community surrounding the Phillips Mine. High on an overhanging mesa the mine appeared to be closed, but its tailing dump gleamed in the midday sun with an emerald translucence. Here is good hunting ground for rock collectors, but permission to hunt here as elsewhere should be obtained from the property owners.

Most of the next five miles of road ran through pine forests. Occasionally it skirted awesome gorges or crossed terrifying cliffs where only a hand's breadth lay between the car and a solid limestone wall on one side and a thousand feet of sheer blue space on the other. Along these cliffs we were exposed to the full beauty of some of Arizona's wildest and most inhospitable country.

The last three miles to the Jacquays and Regelman mines were hair-raising, to say the least. Just before dropping down the steep grade into Jacquays' camp, we met the mine owner himself, driving an ore truck. Fortunately, there was room to pull over, and we stopped to introduce ourselves. Looking at our car, D. W. Jacquays shook his head dubiously, and warned us to make haste so as not to risk meeting the ore

I could estimate it only in the thousands of tons. It was serpentine casually thrown away on dozens of great mine talus slopes flung down the sides of breath-taking chasms. All along the nine miles from U.S. Highway 60 to the brink of the 2000-foot rim on which we stood, we had passed those pale green dumps.

We had come up into the plateau country from Phoenix, stopping there only long enough to pick up the elder Ransom's boyhood chum, Frank Vatter. A horticulturist, Frank owned a prosperous florist business in Michigan where he and Ransom Sr. grew up together. Since Frank's retirement to the capital city of Arizona, he has done wonders with citrus and flowers. Frank

Vatter is tall and thin, but at 70 has the vigor of a man half his age, and a poet's delight in the mystery of growing things. He loves desert cactus, and pampers their exotic blooms in season.

Like many Easterners who come West to stay, Frank has an eye for the wide open spaces. With alacrity he accepted our invitation to visit the asbestos mines 35 miles northeast of Globe. Enroute, we stopped briefly in the fascinating copper towns of Superior and Miami. Globe itself was a beehive of activity. But as soon as we turned north on U.S. 60, we were in the real Arizona plateau country—lonesome, timbered with aromatic yellow pine, and at that time of year laced with snow at its 5000-foot eleva-

truck which was loading at his mine and soon to be on its way down the road. "You'd never get a chance to pass one another down there," he said, pointing to the catwalk road, "and it would be a mighty dangerous job backing up three miles of hairpin road."

He went on to say that he did not mind visitors as long as they did not get in the way of the ore trucks. "Anybody who comes in here," he said succinctly, "travels at his own risk! There are millions of cabinet specimens to be had, but please don't recommend this road to inexperienced mountain drivers." I promised him I wouldn't, so unless you have jeeped into the remotest fastnesses of the Grand Canyon State heretofore, it is advisable not to attempt this trip.

I have driven wild mountain roads from Alaska to Sonora, but nowhere have I had so harrowing an experience as those last three miles provided. Imagine, if you can, walking a tight-rope across the Grand Canyon. That is how it feels to drive the Jacquays road with its 2000-foot drop into Ash Creek less than eight inches from your outside tire tread. Moreover, the width and hood of most passenger cars will narrow your field of vision, so that much of the time one is unable to see the roadway at all on steep hairpin curves and twisting descents. At the mine, the foreman looked at us with amazement. "First time a Cadillac ever got into here," he said.

The loaded ore truck we had been warned not to meet churned around a corner, outbound for Globe. The driver sat high up and had a good view over his engine. The truck sides almost scraped the cliff wall and extended out over sheer space on the other side.

So exhilarating was the scene before us that we could only stand and gaze in awe, feeling ridiculously small, perhaps the way an eagle might feel soaring high over trackless canyons. The magnificence of the Salt River gorge, with its endless miles of canyon and blood-red precipices is scenery to make any rockhound lift his eyes from diamonds at his feet to drink in the beauty of sky and mountain, of vastitudes beyond imagining.

Finally, my companions turned to their hobby, and started up the nearest talus slide like a couple of bighorn sheep. I marveled at their enthusiasm and energy, and even more so at the amount of labor that had gone into those mines, of the men who conceived and built that fantastic road across that forbidding land through virgin forest to the very brink of the canyon country.

There were indeed good cabinet



Navajo miners building a loading chute at a newly opened asbestos tunnel at the Jacquays Mine.

specimens everywhere. The roadbed itself was strewn with serpentine and long-fibered asbestos which had fallen from ore trucks. Serpentine lay in

chunks of all sizes, translucent green and yellow, merging into white, often rimmed with the cottony fibers of pure chrysotile. Thousands of tons of it lay

Gem quality serpentine and cabinet specimens of asbestos in serpentine are found in mine dumps such as this one at Jacquays.





Loading chute at the Jacquays Mine on the steep side of a cliff. A short track runs back into the mine which penetrates the cliffs horizontally. Loaded trucks must switchback over nine miles of narrow mountain road to U.S. Highway 60 and 35 miles of pavement to Globe.

jumbled in the immense talus piles that descended the stair-stepped cliffs.

The Apache miners we met were friendly, but not talkative, going about their work with a calm dignity peculiarly in harmony with the immensity of the scene around them. Sunlight filled the canyons and played along the rim of the world, up there high above the Salt River, warming and comfortable despite the snow on the north faces of the cliffs and the nagging wind strumming the distant pines.

From where we parked the car we walked around the corner to the end of the road, which was a loading chute. We climbed to the catwalk above and investigated the mine itself. There was barely room to stand alongside an ore car where one of the miners, helmeted and wearing his miner's lamp, told us about the mine. No timbering is necessary in these asbestos mines, and deep inside the serpentine veins, the tunnels are powder dry. The Jacquays mine has about 1200 feet of

tunnel in the cliffs now, working 16 Apache Indian miners.

At one time, asbestos was worth more than gold ore. In the late 1920s the Regelman and Phillips mines produced a three to four-inch fibre asbestos that brought \$3000 a ton for the raw ore shoveled onto trucks and carted to the refining plant in Globe. Today, prices are lower, but still higher than the \$100-a-ton ore which an average gold mine produces, or \$35-a-ton uranium ore found on the nearby Colorado Plateau.

Asbestos veins crop all along the Salt River in some of the most perpendicular topography south of the Grand Canyon. Early mining-minded travelers coming up the river from Phoenix noticed serpentine float and wondered at the long fibers of raw asbestos which they picked up along the sandbars of the river. By tracing this float up steep talus slides and along the rock faces of 2000-foot cliffs, prospectors located commercial veins, all in

the dolomitic Mescal limestone. Arizona leads all states in the production of chrysotile asbestos.

All though this strangely sculptured region, the cliff faces reveal Mescal limestone, Troy sandstone, diabase, and Dripping Springs quartzite. Fifteen separate layers of asbestos and serpentine stair-step the canyon sides. The constant association of asbestos and limestone near its contact with diabase suggests strongly that serpentine and asbestos result from hydrothermal metamorphic action of the intruding diabase upon the limestone.

Gem quality serpentine, such as we were finding by the ton, literally, can be carved with a knife. Excessively fine-grained and very dense, it takes a beautiful polish. As raw material for bookends, I do not believe Salt River serpentine can be surpassed.

We hunted over fresh dumps for an hour or more and visited the men working the mines. An empty ore truck drove in and started loading at the chute and we decided it would be a good time to get away while the road was empty of heavy machinery. We had all the fine specimens we could carry away with us, but like small boys surfeited with chocolate cake, we regretted having to leave so much behind.

I believe that if all the rockhounds in the world should hunt over those dumps, they could hardly make a dent in the tonnage of gem stone detritus. The miners themselves are interested only in asbestos. D. W. Jacquays has erected a small mill near the mines where five men separate the asbestos from the adhering serpentine, tossing the latter out into sheer space. Some of the tailing piles are difficult to reach. Only rock hunters who are half mountain goat should try for the bigger slides.

From behind my camera, I watched the elder Ransom and Frank Vatter scrambling along the cliff faces like half-grown kids, impressed by their eagerness to gather the finest specimens, seemingly always just a half reach farther on. I doubt if either paid any attention to the ever-present possibility of plunging headlong into the yawning depths. That, of course, is the usual nature of rockhounds.

I cannot emphasize enough the danger of this road. Remember: there is no place to turn around or to scrape past another car on the final stretch of the Jacquays road. But, whether you come for rocks or scenery, fresh air and sunshine, or photographs, you will find something of interest along every mile of road above the Salt River canyon.

HISTORIC DESERT WATERHOLES I

Las Vegas Spring

Water and life mean the same thing on the desert. In pioneer times journeys were charted by distances between watering places and death was the penalty for losing the trail or misplanning. Here is the first in a series of feature stories dealing with the Southwest's old time watering places, written and photographed by Walter Ford. The Las Vegas, Nevada, Spring was an important station on the Old Spanish and Mormon trails.

By WALTER FORD

Photographs by the author

ON A HOT summer day in August, 1924, I left my home in Los Angeles for Las Vegas, Nevada, to seek out the old watering place around which the original settlement was founded.

My father had worked in the bridge and building department of the San Pedro, Los Angeles and Salt Lake Railroad, now the Union Pacific, from 1904 to 1906 when it was extending its lines westward, and had spent considerable time exploring the Old Spanish and Mormon trails in southern Nevada.

Before starting my trip I had read the notes he made on his travels and learned that he had given particular attention to Las Vegas Spring and its early history and I decided that it would be an interesting spot to visit.

Those who traveled the National Old Trails route across the Mojave Desert during the summer months of the early '20s will easily recall the one-way sandy road, the dazzling heat, the desolate waterless stretches between towns, and the never ending struggle for each mile gained.

Totally lacking in knowledge of desert ways, but with the confidence of youth, I traveled alone, hatless under a blistering sun. I had partaken freely

of ice cold drinks whenever they could be obtained along the route. On the night of the second day, I reached the lonely pass in the Black Mountains, now the junction point for the Searchlight and Hoover Dam roads. Getting out of my car to obtain a drink from my water bag I collapsed in the roadway. I remember how a lone motorist came by, set up my camp cot and made me comfortable; how in my semi-delirious condition during the night I heard peculiar scratching sounds around my cot and discovered in the morning that a pair of scorpions had been trying to climb a piece of canvas that extended from the cot to the ground. They would almost reach the cot, then loose their hold on the nearly vertical section of canvas and slide back to their starting point, thereby making the strange sounds which I heard.

I made my way into Las Vegas where my ailment was diagnosed as heat prostration. I rested at the old Overland Hotel for several days, then with no further desire to continue my explorations, I made my way homeward by easy stages.

Twenty-eight years after my ill-fated attempt to reach Las Vegas Spring, I completed the journey. The scene of

my unpleasant experience is now occupied by a modern service station and the wash in which I lay under a mesquite bush to escape the mid-day heat on the return trip, is now a busy street in the thriving community of Henderson.

Las Vegas Spring was known to travelers soon after 1776, when Father Escalante made his unsuccessful attempt to establish a trail between Santa Fe and the coast of California. Although Escalante's party did not reach this waterhole, others began to extend the path he had followed and it was not long before the spring became an important watering place for caravans moving westward. Captain John C. Fremont reported having visited a camping place called Las Vegas in 1844 and described the water as being pleasant to the taste but too warm to be agreeable.

Officials of the Mormon church sent Jefferson Hunt to California in 1847 to buy seeds and food. Enroute he camped at Las Vegas Spring and was so impressed with its possibilities that he reported very favorably upon it on his return. In 1855 Brigham Young commissioned William Brighurst to proceed to Las Vegas Spring with 50 young men to establish a mission and



Once an important watering place for immigrants headed Westward, Las Vegas Spring now supplies water mainly for irrigation.



The old fort at Las Vegas Spring has served as an army post, Mormon mission, post office and as a shelter for many early travelers of the Old Spanish and Mormon Trails.

to build a fort to protect the immigrants and the United States mail from the Indians. An adobe stockade was built and on January 10, 1856, a postoffice was opened with Brighurst in charge as postmaster. The following year

Brigham Young called for a concentration of his followers at Great Salt Lake and the settlers were withdrawn from the mission.

After the Mormons left, O. D. Cass, of the Arizona legislature acquired the

land and water rights, which at the time was in Arizona territory. Cass operated the ranch with Indian labor and on one occasion when an unruly native was killed, he had to make a hasty flight to Barstow with his family until the situation on the ranch calmed down. The ranch was purchased in 1882 by a '49er named Stewart, who had made his fortune in the gold fields of California. Later he was killed in an argument with a neighboring rancher, but Mrs. Stewart continued to live at the ranch, which still bears her name, until her death in 1929.

Las Vegas Spring and the old ranch house are located on Fifth Street, a short distance beyond Hellsdorado Village. I noticed the name Stewart on the mail box and upon inquiry learned that some distant relatives of the original owners now occupy the ranch house.

The spring, which is still flowing, is located in a creek bed on the west side of the ranch house. The old fort, standing directly behind the ranch house, has been partially restored by the Daughters of Utah Pioneers. They have also erected a plaque commemorating the establishment of the first postoffice in 1856.

Rains Improve Southwest River Runoff Predictions

Heavy January precipitation has brightened water supply forecasts for major streams in the Great Salt Lake, Upper Colorado and Rio Grande Basins. The Lower Colorado precipitation pattern was erratic. Rainfall ranged from only 25 percent of normal over portions of the lower Verde River basin to over 200 percent of normal over some areas in the upper watersheds of the Salt and Little Colorado Rivers.

The Colorado River basin above Cisco, Utah, experienced much above normal precipitation during January. The portion of the basin above Cameo, Colorado, average 165 percent of normal rainfall while the higher drainages of the Gunnison and Dolores Rivers reported amounts which averaged near 200 percent of normal. As a result, runoff forecasts improved 10 percent in one month. The current outlook for the main stream and tributaries above Cameo and for the Taylor River is for 105 percent to 115 percent of the 1938-52 average runoff. Only 85 percent of average streamflow is indicated for the Uncompahgre and upper Do-

lores Rivers and about 67 percent of average for the lower Dolores River. The February-September streamflow of the Colorado River near Cisco, Utah, is forecast to be 4,390,000 acre-feet or 111 percent of the 1938-52 average.

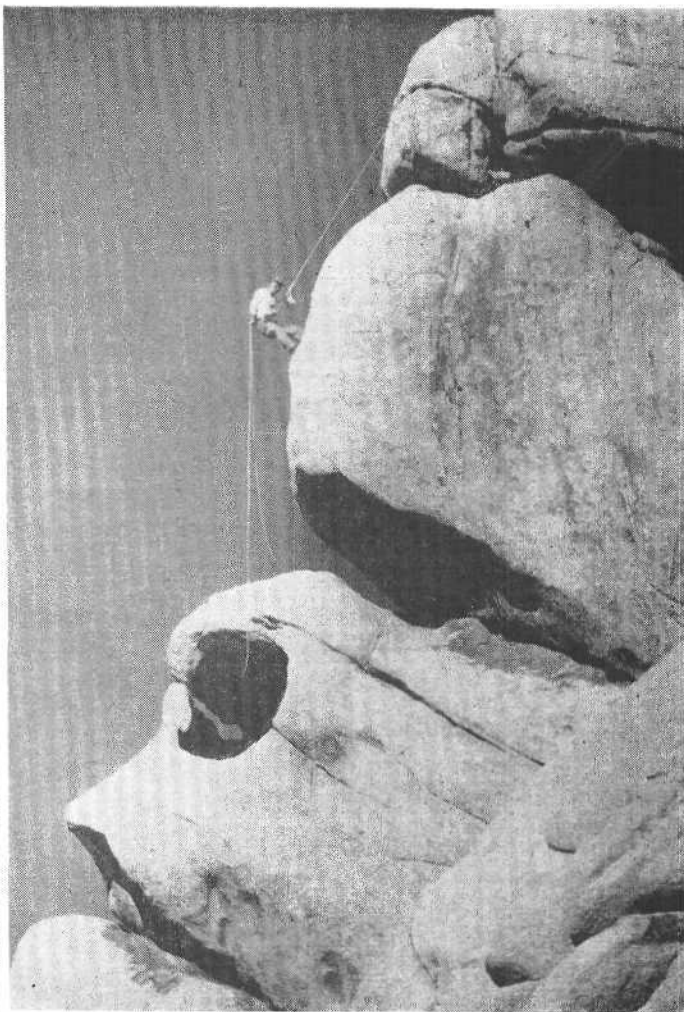
Streamflow for the upper Green River basin in Wyoming and for the Yampa and White Rivers in Colorado is expected to range from 115 percent to 125 percent of average; the Duchesne Basin in Utah forecasts range from 115 percent of average for the river near Tabiona to near normal for the rest of the basin; Green River at Green River, Utah, forecast is 122 percent of average.

A 200 percent of normal rainfall over the San Juan Basin has caused the experts to predict a runoff of slightly less than the 15-year average for that river compared to only 65 percent of normal predictions on January 1.

Forecasts for the Lower Colorado basin rivers are: Little Colorado, 50 percent of average; upper Gila, 20 to 30 percent of average; Salt and Verde, 50 percent.

January rain from 140 to 250 percent of normal over the Great Salt Lake Basin fashioned the following runoff predictions: Sevier and Beaver Rivers, 60 to 70 percent of normal (even though the water supply prospect is more encouraging, the situation here is still critical, especially when the amount of water in storage is considered); Humboldt River at Palisade, Nevada, and the South Fork near Elko, Nevada, 200 percent of average; Martin Creek near Paradise Valley, Nevada, 150 percent of average; Carson and Truckee Rivers, 200 percent of average; Walker River, 150 to 175 percent of average; Owens River near Bishop, California, 133 percent of average; Mojave River in California, 60 percent of average; Chewaucan and Silvies Rivers, ample water forecast.

Runoff near the 1938-52 average is in prospect for the major tributaries and upper main stream of the Rio Grande in Colorado. Forecasts for the streams along the western slopes of the Sangre de Cristo Mountains in New Mexico range from 52 percent of average to near 80 percent of average. The streamflow for the Rio Grande at Otowi Bridge is forecast to be 71 percent of average while only 59 percent of average runoff is forecast for the inflow into Elephant Butte Reservoir. Runoff for the Pecos River Basin is 60 percent of average.



Two important techniques of rock climbing. Left, chimney technique is used by Roy Gorin to climb up a 30-inch wide passage by use of cross-pressure between feet, hands and back. Right—rappelling down a pinnacle. Photographs by Niles Werner.

They Spurn The Easy Route..

Here is a sport in which the hard way is the most fun—Rock Climbing, as practiced by those skilled and daring members of the Sierra Club. A sheer granite face may look like an impassable route to most observers, but to the Rock Climbers it's merely another problem—one of many encountered and solved on a typical weekend outing.

By LOUISE TOP WERNER

JOHN MENDENHALL, spread-eagled against the cliff, gripped the granite with bloody fingers. His shoulder muscles strained under his red plaid shirt. A Tyrolean hat perched rakishly on his head. Near the base of the butte half a dozen boy scouts watched.

"You can walk up easily on the other side," said one.

"Yeah—" said another, "I wonder why he picked such a hard way?"

Had John not been busy at that mo-

ment balancing on a two-inch ledge 50 feet above the ground he might have answered, "Ah! But this way is more interesting."

A spectator may shudder at the sight of a rock climber hanging from a crack, his tennis shoes scrabbling for a grip on the smooth, high-angle wall. The chances are that the climber himself is too engrossed in his problem to feel fear. The chances are he is experiencing an amazing alertness, a sharpening of the senses, a coolness he

never feels while sitting behind his desk. When his feet again find a grip his knees may buckle and his stomach may become queasy at the belated recognition of peril; but while faced with the immediate necessity of solving the problem he feels strangely calm and capable. Perhaps this explains in part what motivates the dyed-in-the-wool rock climber and why he shows such a fervent attachment to his sport.

The Rock Climbers of the Sierra Club, Los Angeles Chapter, spent a recent week-end trying their ropes on the buttes of Hidden Valley campground in the Joshua Tree National Monument of California.

On Saturday night Steve Wilkie suggested a moonlight hike in Hidden Valley, an intimate little basin, adjoining the camp ground also called Hidden

Valley. A dozen rock climbers joined him.

The moon flooded Hidden Valley from between the brows of a stone-age giant and the crooked nose of a gargyle. The sandy wash, scribbled over with the tracks of quail, coyote and deer, meandered among bunches of dried buckwheat, salt bush and Mormon tea. When our conversation lagged, the chirping of crickets filled our ears. Gesticulating Joshua trees, pinyon pines and nolina, and their shadows, stood watch over the valley floor, an occasional one climbing toward the 150 foot pinnacles, block-houses and weird granite faces that crowded one another around the perimeter of the basin.

Moonlight and shadows conjured up the ghosts of the '70s when cattle rustlers are said to have hidden their stolen cattle here. You could almost smell the smoke of their campfire and hear the whinny of their horses. You could almost make out the forms of cattle browsing among the bushes and boulders.

Water, conspicuous by its absence, has left its imprint everywhere. Water and sand have scoured out cavities, dainty honeycombs that look like lacework, and caves with the tracks of bobcat in their sandy bottoms. Smooth granite troughs shoot down inclines like a child's play slide. The annual rainfall here is less than five inches. Even the Joshuas are almost ghosts.

The moon was still riding high when we crawled into our sleeping bags. When we again opened our eyes the

sharp desert sun greeted us. After a hardy breakfast of cooked cereal, bacon and eggs, toast and milk, the rock climbers scattered in all directions, each group, or "rope" of two or three picking a different butte to climb.

The buttes, it is thought, were once masses of molten magma far beneath the surface. Eons ago, pushed up nearly to the surface by heat expansion, they cooled and solidified. The softer materials around them gradually eroded away and today they stand as an army of gray sentinels, 100 to 150 feet above the desert floor.

On top of a 150 foot pinnacle south of the campground Roy Gorin, a plus six-footer in army ski pants, put Joe Stone through the rappel test. Rappelling is a technique for roping down in seconds a distance it takes minutes or hours, to climb. Joe faced a horn of granite around which Roy had slung a 5/16-inch rappel rope. He straddled the double nylon and picked it up behind him with his left hand. His eye followed the rope to where it fell over the edge of the cliff about three steps behind him. He drew the double rope around his left hip and across his chest. He scrutinized the rope, scowling, hesitated, and looked at Roy who was fingering the rope around the horn to make sure it would not slip off.

"Is this right?" asked Joe, sliding the rope around his left hip.

"Are you asking me?" Roy's eyes disapproved. His angular hands pulled at another rope knotted around his waist. "You're showing me that you

know how to rappel. If you need instruction, go back to the practice area."

Joe examined his stance in the rope. He backed a step and threw the double rope over his right shoulder. It slapped against the wall below.

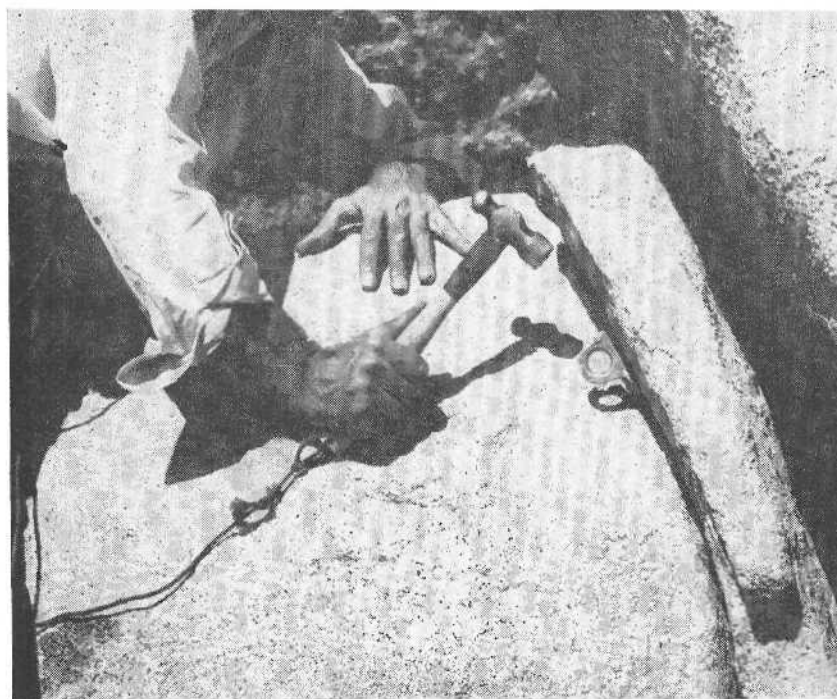
"I've got you belayed on this other rope," encouraged Roy. "If you haven't got the rappel rope on right, you won't fall far." Roy braced himself against a boulder.

Joe grasped the rope in front, as it came from around the horn, in his left hand and backed up a step. Grasping the rope behind him with his right hand, he backed to the edge, leaned back on the rope and looked down the wall. It fell, over a slight bulge, to a ledge 40 feet below. Joe took a deep breath. "Well," he said, "Here goes," and backed off the edge. Leaning far out, he began walking backward down the wall, controlling his speed with the rate at which he let the rope feed through his hands. His face relaxed. With 15 feet to go he bounced himself off the wall with both feet, smiling broadly. "Whew!" he said, landing on the ledge, "That was almost like parachute jumping."

"Better," said Roy, "On a parachute you can't stop in midair any time you want to."

Some rock climbers think Roy Gorin is a hard taskmaster, but they respect his skill, and his leadship. He takes seriously his responsibility to keep cocky young climbers within their abilities while they are developing their judgment. In assigning leaders he rates judgment as important as climb-

Hammering a piton into a crack, left, and snapping the rope into the carabiner, right. Photographs by Niles Werner.



ing skill and much more important than mere daring. He insists on strict adherence to the group's motto, "Safety Before Conquest." Every rope, consisting of a leader and one or two others all tied in on the same rope, must carry a First Aid kit.

In August, 1950, Roy Gorin led the rock climbers who recovered the bodies of Steve Wasserman and Chris Reynolds, two eastern teen-agers who fell to their deaths attempting to scale Mt. Whitney's eastern wall. In order to recover one of the bodies Gorin's group had to rappel down a 2000-foot wall, spending a night roped to a narrow ledge 1000 feet above the base.

Roy Gorin usually takes his family along on rock climbing trips. His wife, DeDe, is a tireless hiker and an enthusiastic camper. Linda Lee, 13, and Douglas, 9, both cut their teeth on a carabiner, a piece of climbing hardware without which their father would hardly feel dressed. Taking the family along has sometimes involved carrying a baby on his back in addition to a 90 pound pack. Roy makes his living as an Administrative Officer for the Federal Government.

While the rappel testing continued on the south pinnacle, half a dozen climbers were clustered around the base of a spaniel-headed butte north of the campground. Glen Warner sat braced in a niche at the top of a 30-foot trough, working the rope around his hips, taking in the slack while a dark-haired girl in jeans struggled toward him up the trough. Halfway up she reached a wedged chockstone. Her fingers searched up over it. They found a knob to grasp and she began pulling herself up, until she was prone on the chockstone, her legs flailing the air. After a deep breath she pulled herself to her feet, stretched her arms and felt her biceps.

For the beginner the rope is for holding the climber, should he fall—not something to hang on to as he climbs, much less something to pull himself up on. He moves under his own power. The rope is a moral support, a psychological aid. Knowing the rope is there gives the climber confidence to expand his capacities. In advanced climbing the climber may use the rope for direct aid, but climbers do not pull one another up.

The usual procedure at practice climbs is: A qualified leader takes two less experienced men with him on a 120 foot 7/16-inch nylon rope. He picks a route that is within the abilities of the other two. He places as second man, the one who has the most experience belaying and holding falls, because that is mainly what the second man will be doing. Since the leader climbs without a belay from above, he wants



Roy Gorin, expert rock climber. Photograph by DeDe Gorin.

to be belayed from below by someone who can hold him, should he catapult past him. They climb one at a time.

The second man belays the third man, too. Most of the time he sits in a welter of rope, his feet braced against a boulder, taking in or feeding out the rope by sliding it around his hips. Rope management is no small problem. Getting the ropes tangled creates a hazard, slows up the climbing and earns dirty looks from the leader. The third man merely follows, carrying the First Aid and lunches, and spends his waiting periods resolving to learn to belay and hold falls so he will graduate from the end of the rope.

Signals are used by the climbers. When it is time for the third man to move up to the second man, the second man calls, "Belay on." It means that he is in position, ready to take up the slack and hold the third man, should he fall. The third man calls back, "Climbing," but waits until the

second man answers, "Climb." Then the third man climbs. When he reaches the second man he finds a secure footing and says, "Belay off." That ends the second man's responsibility as far as that pitch is concerned. A "pitch" is the distance between belay points. It varies with the terrain, depending on where, within his length of rope, the leader finds a spot he considers secure for belaying.

Often the climbers get into positions where they cannot see one another, but it is essential for safety that they hear one another. On high, windswept mountains, hearing becomes an added problem.

At scheduled practice periods experienced climbers teach newcomers how to tie knots, belay, hold falls, rappel and coil the rope. The Safety Committee gives the Minimum Safety Test, which includes the above techniques. Those who pass may take part in more difficult and prolonged climbs in the

mountains. The group has about 65 active members, 20 percent of them women. Climbs are scheduled every other weekend from May to November.

Sometimes the terrain is such that the leader feels that a belay from below is not enough. If he wants to con- tour to the right of his belayer where

the wall drops sheer below his route, he looks for a crack into which to hammer a piton. He carries these hand-forged, bladed eyes in several sizes on his belt. As he hammers he listens for the ring of iron on rock that indicates a solid hold. He snaps a hinged ring called a carabiner into the eye of the piton. Then he snaps the rope as it comes from his waist, into the carabiner. While he still has a firm footing he tests his weight on the piton. If he falls while climbing his weight will come first on the piton and he will not catapult past his belayer.

Falling is fairly common and is taken as part of the game along with scratched elbows, skinned knees and bloody knuckles. Tennis shoes with rock-gripping rubber soles are preferred for their pliability. But for a long day's climb some prefer six-inch boots with rubber lug soles because they give more support and protection to the ankle.

The hardware is for the protection of the leader. Once he is up, the other two climb with a belay from above, involving less risk. The third man un-snaps the carabiner, hammers out the piton and passes them up to the leader who may use them again.

Frank Hoover and Don Wilson, weighed down with hardware and a rappel rope, picked for their problem a smooth, high-angle flake with delicate footing. Frank, leading, found himself clutching a crack, unable to get a purchase with his feet. He managed to inch over sideways, his knees pulled up under him. Using the knees as feet makes for instability and is frowned on, but in a pinch you do it. Frank reached the end of the crack. Poor as the going had been along the crack, beyond it the holds vanished completely. Not even a crack for a piton and even if there had been one his hands were not free to drive one in. Unable to hold on much longer he inched back along the crack where he gratefully put his weight on his feet again, and let Don take the lead.

Add to the strange mechanics of the sport the human element—seasoned climbers balancing their judgment against the eager, self-assurance of beginners—individualists producing a surprising harmony of action—bits of teamwork that mesh like gear—casual displays of courage—and faith—and folly.

Your dyed-in-the-wool rock climber is a pioneer, always looking for new routes to conquer. The easy route does not interest him. Nothing stimulates him like setting his teeth into a new climbing problem, especially one no one has yet solved. He would rather fail on the hard route than succeed on the easy one.

Desert Quiz:

The more you know about the desert, the better you like it. And so you may regard this Quiz as a sort of school of the desert—an easy way to increase your knowledge of the geography, history, geology, plant and wildlife, Indians and lore of the arid lands. If you get 12 to 14 correctly you have already gone a little way up the ladder of desert knowledge; 15 to 17 rates you as a very good student; 18 or better entitles you to a place up near the head of the class. The answers are on page 44.

- 1—The Lost Breyfogle mine is believed to be located in—Rio Grande Valley _____. Grand Canyon _____. Death Valley _____. Baja California _____.
- 2—Author of the *Winning of Barbara Worth* was — Harold Bell Wright _____. Mark Twain _____. Zane Grey _____. Dan DeQuille _____.
- 3—Lowest natural elevation in the desert Southwest is in — Salton Sink _____. Humboldt Sink _____. Grand Canyon _____. Death Valley _____.
- 4—Indians of the Southwest found the Chuckawalla lizard useful as— Food _____. Household pet _____. A source of poison for arrows _____. Skins for making war drums _____.
- 5—Most conspicuous mountains seen from Springerville, Arizona, are— San Francisco Peaks _____. Funeral Range _____. White Mountains _____. Superstition Mountains _____.
- 6—A common name for the Jesuit Padres who first established missions in Baja California was—The Silent Ones _____. The Black Robes _____. The White Robes _____. The Peaceful Ones _____.
- 7—The Mountain Men came to the West in the middle of the last century mainly to—Search for gold _____. Trap beavers _____. Take up homesteads _____. Fight the Indians _____.
- 8—Before flood waters of the Colorado River filled the basin and formed Salton Sea, the dry bed of the basin was yielding commercial—Borax _____. Brick clay _____. Salt _____. Pumice _____.
- 9—The mountain lion of the Southwest is known by all of the following names except one—Puma _____. Cougar _____. Wildcat _____. Panther _____.
- 10—Tribesmen of the San Carlos Indian reservation in Arizona are— Apache _____. Hopi _____. Papago _____. Navajo _____.
- 11—The old Chisholm Trail became famous as—The route of westbound gold-seekers _____. Spanish trail from Old Mexico to Santa Fe _____. Trapper's route down the Gila River _____. Cattle trail from Texas to Kansas _____.
- 12—Wupatki is the name of—An Indian tribe in Utah _____. A town on the Hopi mesas _____. A famous Apache scout _____. A National Monument in Arizona _____.
- 13—One of the following species of trees now growing in the Southwest is not a native of North America — Smoke tree _____. Washingtonia palm _____. Mesquite tree _____. Tamarisk tree _____.
- 14—Granite is a—Sedimentary rock _____. Metamorphic rock _____. Igneous rock _____. Conglomerate _____.
- 15—To travel from Phoenix to Los Angeles by the shortest route one would take—Highway 60 _____. Highway 80 _____. Highway 66 _____. Highway 99 _____.
- 16—John Slaughter was a famous sheriff in the mining camp of—Tombstone _____. Rhyolite _____. Goldfield _____. Calico _____.
- 17—El Tovar is the name of a famous hotel at—Las Vegas, Nevada _____. Grand Canyon _____. Palm Springs _____. El Paso _____.
- 18—The name Dellenbaugh is best known for his association with— Capture of Geronimo _____. Construction of Hoover dam _____. Navigation of the Colorado River _____. Discovery of silver at Tombstone _____.
- 19—Main field crop grown by the Hopi Indian dry farmers is—Beans _____. Corn _____. Wheat _____. Rice _____.
- 20—If you wanted to climb Telescope peak you would go to the—Wasatch Mountains of Utah _____. Charleston Mountains of Nevada _____. Panamint Mountains of California _____. San Francisco peaks of Arizona _____.

The Gold I Lost in Morgan City Wash

By PALMER C. ASHLEY

IN THE SPRING of 1934 my father was working a prospect near Morgan City Wash 23 miles out of Wickenburg, Arizona.

I had moved recently from Oakland to Los Angeles and when he learned that I had not yet gotten permanent employment he wrote and asked me to come out and help him at the mine. I knew nothing about mining, but I welcomed the chance to get away from the city for a while, so I loaded my gear in my 1926 Model T roadster and headed for Arizona.

In his letter, dad instructed me to leave Highway 89 at Wittmann and follow the tracks that threaded through the dry washes for five miles to the cabin. So I would not get lost and follow stray tracks or find none at all, my father tied tin cans to the mesquite and cacti along the trail.

Wittmann was a single, small, weather-beaten frame building with a lone gas pump. It was late afternoon when I pulled up for gas. The owner and operator was a fine old gentleman who filled my tank and casually asked where I was going. When I told him he critically eyed my vehicle and asked if I carried extra water and oil and a shovel. I told him I did not and he said, "Son, I think you had better bunk here with me tonight and after a good breakfast we'll get you off to a good start."

I will never forget that old gentleman's hospitality. As we ate our supper of pork and beans, bread, coffee and canned peaches, he explained to me how dangerous it was to leave the main traveled highway without the essentials for desert travel, especially without even a road to follow. After entertaining me until bed-time with stories of local happenings, he fixed a cot on the back porch for me and we went to sleep.

After a fine breakfast of bacon and eggs, frying pan toast and coffee, the old man filled a five gallon can with

water, an old gallon can with oil and gave me an old worn shovel with a three-foot handle.

"Now you are all set," he said. I took out my total resources to pay him, but he would only accept payment for the gas and oil. No one could buy his hospitality.

Five miles can seem like a hundred when you are in the middle of nowhere. The tracks I followed dipped and squirmed in and out of shallow washes and gullies, following a course, I imagined, that a lost steer would take. Large boulders had to be detoured and after a crest was topped the surrounding landscape seemed identical with that over which I had just traveled. Any sense of direction I may have had was soon lost. Sand, cactus, rocks and sage brush! I knew now why the tin can markers placed by my father were so necessary.

The only clue to the identification of Morgan City Wash was its size—two hundred yards across. I turned right as my dad had instructed and I found the cabin a half mile down the wash on the far bank, surrounded by a forest of giant saguaro cactus.

During the months that followed we mined, hoisting the ore out by bucket and windlass from a 30-foot shaft, filled 50 pound sacks and carried them over the hill to the dump a quarter of a mile away.

There was no road to the shaft. We would single-jack our holes, place our shots and shoot just before we quit for the day. Next morning we would bar down and hoist out the ore, sack it and carry before lunch. In the afternoon we started drilling again. Dad wanted to stockpile enough ore for a shipment to Wickenburg. The ore was low grade and I doubted if we would break even after the shipping and milling costs were deducted.

When spring arrived dad went to Phoenix on a short business trip. Before he left, he told me to take it easy, which I was more than glad to do. To pass the time I decided to investi-

In desert terrain it is easy to lose all sense of direction. Landmarks never look quite the same on a second and third trip to the same area. Men who have prospected or explored in the arid Southwest know how true this is—and will realize that the story told by this writer may readily be true to the very last detail.

gate a lead deposit up a little wash near the one through which I traveled from the highway. I was told by the prospector who discovered it to hike a half mile up the wash to a 20-foot high wall on the wash's right bank. This wall had vertical eroded ridges resembling a pipe organ, he said. Over this wall and back of the next rise was the prospect hole with large chunks of galena on the surface.

I started off early in the morning and easily found the wash, but was uncertain about the fluted wall. I climbed the first one I came to and hiked over the first rise, but found no prospect hole. I retraced my steps to the bank of the wash and continued on. At each intersecting wash I descended to the wash floor to look for the fluted wall.

It was on one of these descents that I stumbled and fell down a rather steep slope, striking my knee on a rock.

It was a painful bruise, and I sat down for a few moments. In front of me was a ledge of pure white quartz streaked with red and green discoloration. The bright colors caught my fancy and with my pick I broke off a piece of the rock and tossed it in my sample sack and went on.

Later I stopped for lunch and early in the afternoon climbed another fluted wall, and beyond it found the prospect hole exactly as described. I took several samples of galena and, very much pleased with myself, returned to the cabin. I placed the sack in a corner and immediately forgot about it and its contents.

My father returned in a few days and we casually discussed what we had been doing on our own time. I told him about the lead and brought out the sample sack. He carefully examined each piece with the 10-power glass he carried on his key ring. From the bottom of the sack he pulled out the white, red and green quartz specimens and laid it on the table. I explained that I thought the colors would look well in the rock garden. He ex-

amined the upper surface carefully with his glass and then turned the piece over. We both gasped!

The underside was covered with fine wire gold and small pin head nuggets which gleamed in the light from the coal oil lamp. Dad wanted to know where I had found this piece of quartz—was it in a solid formation or just float? Could I go back to the spot? I answered that I knew exactly where I had found it and we went to bed, dreaming of riches!

After a hurried breakfast we filled our canteens and started off. We retraced every step I had made, or so I thought, until we came to the knoll where I had eaten my lunch. The orange peel was still there—but where was the rich ore? We could not find it!

We told no one about my find and every day for weeks we hunted for that lost ledge. Each time we started out I was sure I would be able to find it again. We did find a similar formation further up the wash, but it carried no value. Finally we told two other prospectors about it and they joined us in the search but with no success.

When our ore shipment showed practically no profit for all our hard labor, I decided to go back to Los Angeles and dad left for the Cave Creek area.

In 1951, with an old friend and prospector, I returned to Morgan City Wash. New roads and a new car made the trip much easier. Nothing much had changed in the Morgan City Wash area. We easily found the right wash and even the same formation, but the lost gold is still lost.

INDIAN RELOCATION RECORD SET IN 1955

The American Indian set an all-time record this past year in accepting job opportunities off his reservation, Acting Secretary of the Interior Clarence A. Davis announced. According to figures received by the Bureau of Indian Affairs, almost 3500 Indians moved away from their reservation homes to areas that offered greater employment advantages.

Of the 16 agencies where the Department has a relocation staff, five have reported on the number of "returnees" for fiscal 1955. These reports show that fewer than 13 of every 100 relocatees give up and go back to their reservations after trying life in the cities.

The average size of a relocated family is 3.9. However, about 800 of the 3500 Indians who relocated were single men and women. Indians who seek relocation are generally the younger members of the tribe — those 45 or under.

PUEBLO PANORAMAS I TUZIGOOT ♦♦♦

This month Desert Magazine introduces a new series to its readers, Pueblo Panoramas—outstanding photographic essays of the dwellings of the ancients and the commanding views from these shelters. Writer-naturalist-photographer John Blackford, now of Libby, Montana, has spent many fascinating years on the Desert Southwest. In the course of his wanderings he discovered many trails crossing his own—among them the dusty but discernible paths of pueblo and cliff dwelling Indians. In these vivid camera scenes we glimpse the life of those ancients who dwelt in the Southwest before the white man came.

By JOHN L. BLACKFORD
Photographs by the author

WHAT WAS THE world like to pueblo and cliff dwelling Indians? On what did they gaze, those ancient, persistent people who raised a unique and amazing civilization in the desert? Surrounded by enemies and drouth, by savages and sand, what did they see to give them inspiration for their arts and crafts, their work and play, their legends and religion?

All their lives they looked on the same red canyon wall, the same green ribbon of river winding across the desert, or the same black hills of cinder and tinted clay. Only once in generations, when throttled by drouth, wasted

by disease, harried endlessly by raiders or otherwise deserted by angry gods, did they venture upon sights that lay beyond the small circle of the world they knew. This was a land of stark and vivid beauty. Yet its wastes were treacherous and its canyon distances unknown.

In their oases resided safety, and beyond, danger. We cannot know all it meant to them. But if we climb to cliff and citadel, we can look upon those scenes and panoramas that nurtured a race; and brought into flower a fascinating culture, while all about was savagery and emptiness.

The Cítadel of Tuzígoot . . .

(Upper photograph, opposite page)

In Arizona's green valley of the Verde, high above the river's fertile flood plain, prehistoric pueblos erected a spectacular apartment house-fortress. The strategic site, on a limestone ridge dominating an oxbow bend in the stream, is called by the Apaches, Tuzigoot or "Crooked Water." Likely their nomad ancestors and those of the warrior Yavapais harried its ancient farmer inhabitants, who held their citadel from the 10th to near the end of the 14th century.

The Panorama from Tuzígoot . . .

(Lower photograph, opposite page)

From the citadel of Tuzigoot, across rich fields, over green juniper woodlands and shimmering cottonwood stream borders, you look to far hills that rim the Verde Valley. Vermilion cliffs, outcropping in strata of astonishing color, paint the middle distances with brilliant hues. Few pueblo panoramas match the wide view from Tuzigoot in qualities of inspiration, restfulness and peace. Only a major tragedy could have made the pueblo people put this scene behind them.



THE *Desert* MAGAZINE CLOSE-UPS

Jerry Laudermilk, author of over 30 *Desert Magazine* feature stories since 1940, died at his home in Claremont, California, on January 21. At the time of his death he was Research Associate in Geochemistry and Paleobotany at Pomona College. His accomplishments included the publishing of a great many scientific papers on many subjects besides the countless articles of general interest that appeared in this magazine and others.

His ability to humanize, dramatize and make popular and understandable scientific aspects of the natural—and particularly the desert—world was the key to his success as a writer.

Without sacrificing scientific accuracy, he entertained and informed his readers on a wide range of subjects, from the creation of geodes to the cause of desert mirages.

His success in this field was due largely to his oft expressed creed: "I don't know of a single natural thing which, if you just become conscious of it, is not fascinating."

An artist as well as a writer and scientist, Laudermilk illustrated many of his stories with line drawings and water colors. His last major work in this line was the creation of scores of detailed flower and plant drawings for a new botany book by Dr. Lyman Benson, tentatively scheduled for publication in September.

Laudermilk was born at Rich Hill, Missouri, in 1893 and graduated from the College of Pharmacy in Kansas City in 1914. In 1917 he enlisted in the Army and was made an instructor in the School of Gas Defense at Fort Sill, Oklahoma. A year later he was medically discharged with tuberculosis and doctors gave him little hope.

He headed for the ranch of a cousin near Wickenburg, Arizona, and instead of resting as the doctors ordered, he hiked from Wickenburg to Prescott, with camp equipment and supplies on his back. Arriving at Prescott not only alive but feeling better, he set off on foot for Flagstaff by way of Camp Verde. At Flagstaff he worked for the Coconino National Forest and then wandered over to Meteor Crater and the Navajo country before returning to Wickenburg, his tuberculosis apparently completely cured.

From Arizona, Laudermilk went to Los Angeles to study art. At the Otis Art Institute he met the future Mrs. Laudermilk, Helen. After they were



Jerry Laudermilk examining Indian artifacts. A remarkable ability to humanize subjects such as these made him popular with Desert's readers.

married they moved to Claremont where, in the early 1920s, they made their living with art and illustration.

At Claremont Jerry became interested in the composition of rocks. After remarkable detective work in identifying some rare minerals, he was invited by Dr. A. O. Woodford to use his laboratory at Pomona College. The two men jointly issued a number of papers and in 1926 Laudermilk was made Research Associate in Geochemistry by the college.

After 1947 Laudermilk carried on his work at home where special students recommended by the college as well as adults and juveniles with emotional or adjustment problems received orientation and knowledge from him. He continued lecturing at the college and was a popular Southern California gem and mineral society speaker.

* * *

"Ghost City on Mingus Mountain" is the first in what *Desert Magazine* editors hope will be a long series of articles concerning the Southwest by Grover Brinkman, an ex-newspaperman who edited his own weekly for 21 years.

Brinkman decided there would be more fun in traveling and freelancing and has been at it since leaving the newspaper field. The Brinkmans make their headquarters in Okawville, Illinois, and they have two children who accompany them on their excursions.

"We all shoot pictures, work the back-trails and out-of-the-way places—and occasionally come up with a good story," writes Brinkman.

Louise T. Werner, author of this month's "They Spurn the Easy Route" has recently accepted a position as associate editor of the new magazine, *Summit*. Mrs. Werner also reports that her mountain climbing dog, Bundle, has conquered his 100th peak of more than 5000 feet elevation. Bundle accompanied the Werners to the top of 11,485-foot Mt. San Geronio in Southern California. The Werners are residents of Alhambra, California.

* * *

Palmer C. Ashley, who wrote this month's true life experience, "The Gold I Lost in Morgan City Wash," resides in Santa Monica, California, where he is employed by the city's engineering department. His father, now 79, is still mining in the Big Oak Flat country where the Ashleys have a gold mine and three asbestos claims. Palmer's favorite spare time pursuit is searching for lost mines and buried treasure, using various geophysical instruments for underground detection.

* * *

Dr. Edmund C. Jaeger, foremost among desert naturalists who has been in ill health for several months, was in an automobile accident early in February, but has written that his injuries were not serious and that he expects to be able to continue his *On Desert Trails With a Naturalist* series regularly. Dr. Jaeger's brother, who was in the car with him when the accident occurred was seriously injured, but there is confidence that he will recover. Lloyd Mason Smith, former director of the Desert Museum at Palm Springs, is collaborating with Dr. Jaeger in the preparation of this magazine feature during his convalescence.

SALT WATER CONVERSION PROGRESS IS REPORTED

The economical conversion of brackish waters for many irrigation uses "is definitely in sight" declared Secretary of the Interior McKay in his annual report on the department's saline water conversion program.

"Estimates of the probable cost of large-scale conversion of sea water show that it is approaching the maximum existing costs of municipal water in the United States and is considerably below those of industrial water, although still several times higher than those of currently used irrigation supplies," he said.

The Interior Department hopes in the coming year to accelerate a program which began in 1952. The Saline water law, passed that year, authorized appropriation of \$2,000,000. The total was increased to \$10,000,000 in 1955.

HOME ON THE DESERT

It's Perennial Planting Time

Perennials are rewarding flowering plants to have in your desert garden. Not only are they attractive and hardy but they bloom summer after summer. And too they come in a wide variety of flower colors and plant sizes which gives the garden artist wide latitude to work in. This month Ruth Reynolds discusses several of these perennial families.

By RUTH REYNOLDS
Photographs courtesy
Jackson & Perkins

APRIL IS planting time, is spring, is lovely—and no time to stay indoors and be a housewife! I'd rather be a gardener or a desert explorer—a gardener with a little time to lean on the hoe or an explorer, with transportation and my trusty spouse, out to discover enchantment in desert lore beyond the city limits.

It doesn't matter that I have discovered the same things many times before: the desert's phenomena are always fresh and invariably I am rewarded, inwardly, as their discoverer.

Not far from my Tucson home are many wonders—the canyons, the saguaro forests, the valley's wide expanse seen from high up on a mountain side—that await my convenience. In April the desert's wildflowers beckon. Now especially, if the winter rains have been favorable, many varieties may be seen along roadways or found in more profusion by the explorer of less accessible spots.

Some varieties can be found only in the foothills or canyons. Among the most beautiful of these are Mariposa Lilies or Globe Tulips (*Calochortus Amabilis*) rich yellow lanterns on slender, leafy, 10-inch stems. We used to find them in Sabino Canyon, 15 miles northeast of town. It took some hiking around boulders and through thorny and spiny growth—but they

were worth it. Being law abiding, I never yielded to the temptation to dig one up and plant it in the garden. Perhaps I shall be rewarded by again being privileged to discover them where they choose to grow.

One of the more common desert perennials is the penstemon. The type with which I am familiar has small tubular flowers of pinkish orange forming loose spikes on graceful stems with gray-green, ruffled leaves. The plants are many-stemmed and grow

about a foot high. Behind our garage there is one that grows several inches taller and blooms profusely—on a little irrigation seepage.

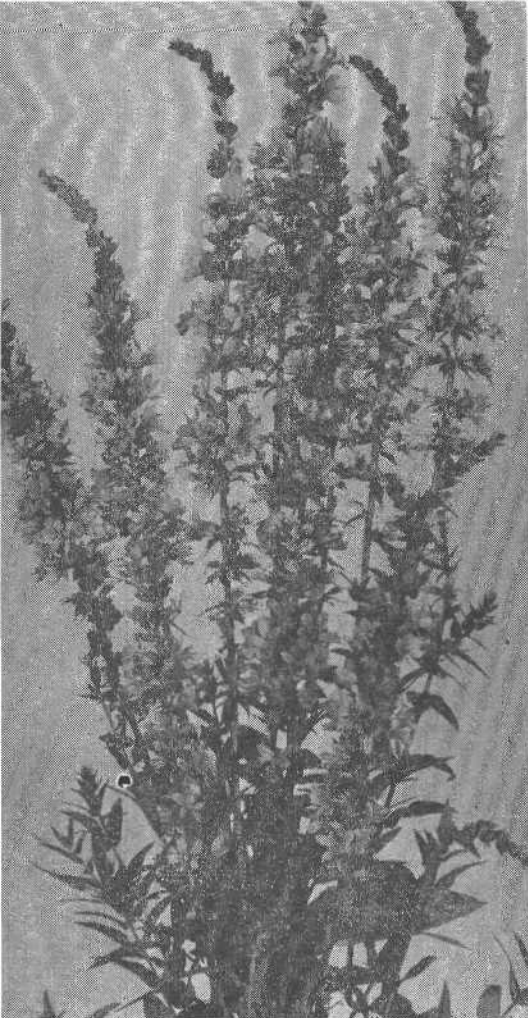
Once when I failed to obtain flowers needed for a party, I rushed out and cut a bouquet from the penstemon plant. It made a surprisingly pretty arrangement. But some of my guests who sat nearest it took to sneezing and sniffing a bit and I blamed the flowers. Whether their pollen or their dust was responsible, I am not sure.

Previously I have not thought of this little wildling as a perennial and probably do so now only because I am considering perennials for the summer garden. Perennials include those plants which die down in winter and resume growth in spring from food stored in their roots, and the penstemon family falls into this category. Being native to the desert, some of its cultivated varieties should prove adaptable in our gardens.

As a rule perennials yield greater

A much improved white form of the new type of large flowered, straight petalled rudbeckias is the Rudbeckia White King. The petals have a spread of four-and-a-half inches and the center cone is of a brown-green color flecked with orange.





The three-foot tall *Lythrum Hybrid Robert* has deep rose pink flowers.

flower dividends than annuals. This inclines me strongly in their favor and entitles them, I believe, to a place in every garden, though the desert gardener must choose, for summer, only those plants which can stand the sun's over indulgence.

Because they are usually grown for mass display, perennials should be located where they will show up to best advantage. My problem is to find a spot far enough from foraging tree roots. Partial shade is preferable but not always necessary. Flowers in full sun but surrounded by the grass, trees and shrubs of our gardens enjoy a cooling system created by the transpiration of vegetation and are less likely to burn than flowers trying to grow in the open desert.

Assorted flowers for a bed or border usually vary in height from tall background plants to medium and low, and in that order I have chosen a few perennials and hope that with luck they may provide flowers for several years. They will have to be taken up and divided every few years as they increase by spreading their roots, but no gardener should expect to lean on the hoe too heavily.

For large, bold background plants

rudbeckias (coneflowers) qualify. They come in several varieties, all with large—3 to 4 inch—daisy-like flowers with straight petals and large seed cone centers.

The Purple, largest and oldest of this family, grows to four feet. Its three-inch flowers have purple petals with dark centers. The King is almost as large. It has crimson petaled flowers with orange-brown centers. Rudbeckia White King is an improved white form. Its four and a half inch flowers have straight white petals and brown-green centers. The plant is sturdy, upright and full and reaches a height of 40-inches. It produces a great many blooms with good cutting stems. There is also a black and gold variety which blooms abundantly and is a mere dwarf of two feet.

While rudbeckias are not the daintiest flowers in the world they are drouth resistant and have a long summer blooming season.

Another perennial in the three foot class is *Lythrum*. Jackson and Perkins, the rose growers, are introducing a new one this spring, *Lythrum Hybrid Robert*—"improved to maintain a comparatively low growth." At that it is a three-footer, with deep rose pink flowering spikes up to 14 inches long. It is said to be very hardy, to bloom all season and to thrive in either wet or dry locations with sun or partial shade.

Slightly less towering are shasta daisies. The Cobham Gold and Esther Red can both be relied upon to make a good showing through most of the summer. Aphids seem to have a great preference for them and must be controlled throughout the spring.

Penstemons include both high and low growing varieties. The highest are the *P. Gloxinoides* which reach two to three feet. They are hybrids with good foliage making compact plants and have loose terminal spikes of tubular flowers in every color except blue and yellow.

Among the more dwarf—18 to 24 inch—varieties is Ruby King with two-inch trumpet-like flowers of ruby red.

Blue Bedder—intense blue to light purple—grows only to about 12 inches, but it is more of a spring blooming penstemon while the others bloom well into summer.

One of the most satisfactory and versatile low-growing perennial is the verbenas. The two most drouth resistant varieties are *V. rigida* with purple flowers in three-inch spikes and *V. hortensis* which has flax-like flowers in compact heads and comes in a variety of colors—red, rose, pink, mauve and white. Hybrids of this variety in-

clude Snow White and the vivid red Firelight — with more compact and bushy plants.

Most perennials do not come true from seed and are therefore propagated from cuttings and sold when ready to transplant into the garden. They must be spaced, with room to grow and spread according to their mature size. Plants that grow to three or four feet should be at least 20 inches apart, as should lower growing plants that spread rapidly, like verbenas.

While all the perennials I have mentioned are fairly drouth resistant, that does not mean they will thrive in our desert gardens without plenty of water. Each gardener will have to learn by experience how much to water. In my garden three waterings a week is usually about right, but on many hot dry days I have had to rush the hose to the rescue of a wilting plant between regular waterings.

A preference for ordinary soil is another characteristic of these particular perennials. Caliche or adobe soils must be sufficiently modified with organic matter and fertilizers.

Hoping to solve this problem, perhaps with some miraculous new soil conditioner, I conducted a friend, a young man with a brand new Ph.D. in soil science, through the garden one day last summer. When we reached the vegetable plot he reached down and tried to pry loose a "sample" of soil. It was so hard and dry that I was literally ashamed of it. Seeing that he disapproved of it also, I said, "Well, what would you suggest?" He shook his head hopelessly and sighed.

"You poor dear," he said, "what you need is two box car loads of bottom land from Kansas or Missouri!"

I forgave him but only after he came up with more practical suggestions. He was more in favor of repeated applications of manure than of manufactured soil conditioners. He also explained that the iron sulphate I'd used when planting the tomatoes was not necessary. The sulphur, which I'd also used, makes the soil's iron available to plants.

Just the same I think I'll use a little iron—a tablespoonfull—down deep in the bottom of each tomato hole this year, because my tomatoes last year had so fine a flavor that many of them got eaten out of hand—by family and friends and neighbors — before they reached the table.

For this reason also—despite my pre-spring resolve to buy my vegetables ready grown—I know that April will find me planting a few tomatoes at least, along with the flowers.

LETTERS

Huxley Deep Well . . .

Tenmile, Oregon

Desert:

I recently re-read Nell Murbarger's feature story, "Along Pioneer Trails" (*Desert*, July, '55) which interested me greatly, especially that part relating to the salt works at White Plains and the nearby old lime kiln.

I worked for the Southern Pacific Railroad for a number of years and passed these scenes many times. Records show that near Huxley (formerly White Plains) one of the first deep wells drilled in the West was put down by the Central Pacific Railway in 1881.

The boring reached a depth of 2750 feet, but the water obtained was of very unsatisfactory quality. At 1700 feet the drill passed through a bed of "petrified clams" and the records declare that at 1900 feet, well preserved "redwood timber" was found.

These records are from *Guidebook of the Western United States — The Overland Route — Council Bluffs to Ogden* which was published in 1915.

I would like to lend my encouragement to Miss Murbarger. I have failed to find one of her stories that I did not enjoy.

MELVIN M. GOOD

• • •

Joshuas in Arizona . . .

Congress, Arizona

Desert:

I would like to take exception to a statement made by Norman C. Cooper in his January, 1956, *Desert* article on the Joshua tree. He states that the Joshua tree grows only on the Mojave Desert. In my ranch just west of Congress, which is not on the high desert, I have miles and thousands of Joshuas.

FREDERICK G. SMITH

Dear Mr. Smith — Horticultural boundaries, unlike political, are not well defined. The eastern extension of vegetation of the Mojave and Colorado deserts of California lies across the Colorado River along the western border of Arizona. These Mojave-Colorado plants mingle with elements of the Arizona Succulent Desert, such as saguaro, which rarely occur west of the river. Two species of yucca that are especially characteristic of the Mojave Desert are found in this Arizona transition belt, the weird Joshua tree (*Y. brevifolia*), which forms small open forests in many places; and the Mojave yucca (*Y. schidigera*).—R.H.

Joshuas From Seeds . . .

Mojave, California

Desert:

I am very interested in learning how to grow Joshua trees from seed. I have tried without success. The five trees on my property are old and I am anxious to get new ones started. I have about three pounds of seed. Perhaps some of your readers will be able to advise me.

BERT L. MARSH

• • •

Death of a Patriarch . . .

Desert:

The proud monarch of the Sonoran Desert pictured above has his arms raised in supplication to the Great Spirit.

His has been a most eventful life. As a youth he looked upon the birth of this great nation; as a mature saguaro he saw it shaken by the Civil War.

In the spring he adorned his arms and head with delicate blossoms and earned the respect and friendship of the Indians by turning those flowers into delectable fruit for them.

And now, after two centuries of



Dead Saguaro

useful life, he beseeches the Giver of all Good Things to preserve his kind that they may befriend man until the end of all time.

WILLIAM JONEILL

Profit From Your Photos . . .

April is a desert month that should be enjoyed out-of-doors. Whether you pack a light picnic lunch and drive a few miles into the desert for a Sunday afternoon family party, or whether you take along bed roll, two-week's supplies and drive hundreds of miles, the photographs you take of sky, sand, children, trees and insects will be a permanent memento of a wonderful time. *Desert Magazine* would like you to share the best of these photographs with your neighbors on the desert. The Picture-of-the-Month contest is open to all who care to enter and two cash prizes are given each month for winning entries.

Entries for the April contest must be sent to the *Desert Magazine* office, Palm Desert, California, and postmarked not later than April 18. Winning prints will appear in the June issue. Pictures which arrive too late for one contest are held over for the next month. First prize is \$10; second prize \$5. For non-winning pictures accepted for publication \$3 each will be paid.

HERE ARE THE RULES

- 1—Prints for monthly contests must be black and white, 5x7 or larger, printed on glossy paper.
- 2—Each photograph submitted should be fully labeled as to subject, time and place. Also technical data: camera, shutter speed, hour of day, etc.
- 3—PRINTS WILL BE RETURNED WHEN RETURN POSTAGE IS ENCLOSED.
- 4—All entries must be in the *Desert Magazine* office by the 20th of the contest month.
- 5—Contests are open to both amateur and professional photographers. *Desert Magazine* requires first publication rights only of prize winning pictures.
- 6—Time and place of photograph are immaterial, except that it must be from the desert Southwest.
- 7—Judges will be selected from *Desert's* editorial staff, and awards will be made immediately after the close of the contest each month.

Address All Entries to Photo Editor

The Desert Magazine

PALM DESERT, CALIFORNIA

Jesuit Shorthand . . .

Kingman, Arizona

Desert:

I recently ran across a prospector in Kingman who has claims in the Chemehuevi Mountains. He told me that he has discovered the writing of Jesuits under Cortez in this area. This writing, he says, is in Latin shorthand. Have you ever heard of such a thing?

He also claims there is a huge cave that runs 43 miles through the Trigo Mountains. This cave, he says, is owned by a fellow in Quartzsite. From another source I learned that there is a cave in this area in either the Chocolate or Dome Rock Mountains with a curse on it. I was also told that there are trails through this area leading to the Superstitions near Phoenix, and that Cortez lost his life and 200 mules loaded with placer gold on these trails. This gold was supposedly found by Jacob Waltz.

JOHN FREDERICK MacPHERSON

Dear Mr. MacPherson—Since shorthand had not been perfected at the time Cortez invaded Mexico, I am somewhat dubious about your friend's report of this and the 43-mile cave in the Trigos. I explored these mountains quite thoroughly in 1911-12 when I was a member of the U. S. Geological Survey in that area, and for 40 years I have known many of the prospectors who were working that area. With all respect to your informants, I suspect that they should be writing fiction.—R.H.

. . .

Prospector Makes Him Cuss . . .

Reno, Nevada

Desert:

I am an old prospector who has been in the mining business for over 50 years, and very successful, too. On the cover of your January, 1956, issue is a picture of a prospector which left me with undecided emotions. I did

not know whether to laugh, cry or cuss. I believe the latter would be in order.

If this character is a prospector, then somebody ought to go soak his head in a slop bucket to put some sense in it.

In the first place a prospector has pride enough to button up his pants and keep his shoes laced. Look at this fellow's hands. He never used a shovel in his life. If he did he would not use a shovel with a D handle as pictured.

This picture is also a disgrace to the burro and if he could talk somebody would get a cussing. No prospector would use a three-eighths-inch hackamore on a burro with an inch rope for a leash. And that old copper-bottomed gold pan has never had a wash in it. And to top it all off, that old army saddlebag on the poor beast has nothing in it.

Taken as a whole, this picture is about the most ridiculous you could print. To most people, mining is something of a romance—a pleasant pastime. Take the mines out of our country and you would not have a printing press to put out your magazine. Show me a country that has no mines and I will show you the most poverty stricken people in the world. Therefore, when you print something about mines, please make it authentic.

OLD PROSPECTOR

. . .

Origin of Rice, California . . .

Anaheim, California

Desert:

I am interested in knowing more about the origin of the small town of Rice, California. I understand that it had a colorful past.

FRANK W. SACKETT

Dear F.W.S.—Rice was originally established as Blythe Junction as a telegraph office when the Santa Fe built its Phoenix cut-off. During the early part of the century, Blythe Junction was a no-man's land, disowned by both Riverside and San Bernardino counties. In that period it was a wild and wooly place since it was impossible to convict law offenders while the town's jurisdiction was in dispute. When the railroad was built from that point to Blythe in 1914, the railroad company renamed the town Rice in honor of the engineer who built the line. Constable Ace Gardner of Blythe and his successor Walter Walsh were called to Rice many times, but they were never able to get a conviction until a survey about 1918 established the town as San Bernardino territory. After that it became a very proper town.—R.H.

Hard Rock Shorty of Death Valley



The new cook from up at the Bald Eagle mine in the Funeral Mountains had come down to the Inferno store to get the next week's supplies. The clerk had gone rabbit hunting that day and Hard Rock Shorty was behind the counter.

"Sure we got fresh eggs," Hard Rock was saying. "Best eggs in Death Valley. They're from Pisgah Bill's chicken ranch.

"He brings 'em in fresh every day."

Shorty started counting out the eggs, and as he picked them out of the basket two by two he talked on:

"I remember the summer Pisgah started that chicken farm," he said. "He's always tryin' some new scheme to keep from workin' an' he bought a lot o' them layin' pullets. Figgered he'd quit prospectin' an' supply the minin' camps with eggs.

"Good idea, too, only Bill had a lot o' trouble the first year. The well on his claim went dry an' he had to start haulin' water from that mineral spring up in Eight Ball crick.

"Next day Bill come rushin' over to the store madder 'n a bee on a paper bouquet. 'Come over quick,' he yelled. 'Somethin's the matter with them chickens. They're cacklin' around the henhouse like a lot o' bluejays—an' them eggs. You outta see them eggs.'

"So Bill an' me walked across the gulch, him a hurryin' like it was all important. He took me in the henhouse and sure enough them eggs in the nests was puckered up like walnuts.

"H'm I sez to Bill. What you feedin' 'em anyway?

"Same as always," said Bill. "Then I remembered somethin'. Where yu gitten' your water?" I asks.

"Well yesterday I started haulin' from the alum spring in Eight Ball crick," he answered.

"Yu'd better start haulin' your water from somewheres else," I told Bill. "Member that time you took that mule o' yourn over to drink at that spring? Puckered up his face 'til he couldn't eat fer two days. That alum water's the puckerin'est stuff in all outdoors."

Here and There on the Desert . . .

ARIZONA

Anti-Litter Bill Introduced . . .

SEDONA — Anti-litter legislation instigated by the Sedona Garden Club was introduced in the state senate recently by Robert Prochnow and Fred Udine of Coconino County. The new measure provides fines of from \$10 to \$100, establishes responsibility for violations from autos, directs erection of warning signs by all levels of government and provides for citizens arrests of violators. The old anti-litter act provided for suspension of driving privileges, but the garden club said the penalty was considered so severe in many cases that law enforcement officers overlooked offenses.—*Verde Independent*

Tribal Judges' Workshop . . .

PHOENIX—Judges of Indian tribal courts in Arizona, aiming to improve their judicial procedures, had the aid of high-ranking state and federal officials at a recent weekend conference. The judges represented four states and 15 tribes.—*Phoenix Gazette*

Papago Health Scored . . .

CASA GRANDE — A Papago Indian baby born today can look forward to an average life expectancy of 17 years—compared to a 68 year average life expectancy for the rest of the nation's population reported Wayne Pratt of the Bureau of Indian Affairs in a local speech recently. He explained that a recent study disclosed that 25 percent of Papago babies die before reaching an age of one year, six percent die before reaching age five, and 52 percent die before their 18th birthday.—*Casa Grande Dispatch*

Indian Custody Plan . . .

FLAGSTAFF — Procedures have been set up for obtaining custody on the reservation of Indians wanted by county officers. Under the new arrangement, a copy of the court complaint and warrant will be sent to the chairman of the tribal council, who will then direct Indian law and order officials to turn custody of the wanted person over to the non-reservation of-

ficials. The wanted person can, if he desires, request a hearing on the matter before a tribal judge. The process is similar to extradition of persons from another state and applies only to crimes alleged to have been committed outside reservation boundaries. Federal officers have jurisdiction over crimes committed on the reservation.—*Cocconino Sun*

Study Indian Alcoholism . . .

WASHINGTON, D. C. — Indian Commissioner Glenn L. Emmons announced the creation of a special commission to study problems of alcoholism among Indians. On the panel are Dr. Earnest A. Shepherd of Avon Park, Florida; and the Rev. David A. Works of North Conway, New Hampshire. The three-month study will be launched among the Navajos. Other tribes on New Mexico and Colorado reservations will also be studied. The Arizona Commission on Indian Affairs reports that Indian drinking is on the increase in Arizona, but is kept under fairly good control. The control situation in Flagstaff is good, one member of the commission reported, while the situation in Gallup, N. M., is very serious. Drinking is on the increase in the Tuba City area, it was reported.



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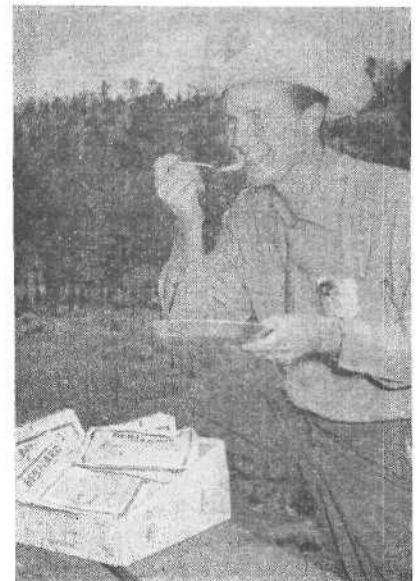
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Open Border Urged . . .

YUMA—The chamber of commerce at San Luis, in the state of Sonora, Mexico, wants the international border to remain open 24 hours a day and has asked the Yuma Chamber for help. At present the port of entry at the Mexican border town is open from 7 a.m. to 10 p.m. weekdays and all night Saturday. The San Luis chamber feels that the volume of trade which its community provides for business houses on the United States side of the line justifies keeping the line open 24 hours a day.—*Yuma Sun*

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Highway Plans Outlined . . .

YUMA—Two highway plans with Yuma as the key point to each have been revealed recently. One calls for a direct-line freeway from Niland, California, on the northern side of Salton Sea, to Yuma, cutting 26 miles from the present Yuma to Niland via El Centro route. The proposed highway is being supported by the Salton Sea Highway Association. The second proposal is for a southern Yuma-Tucson route. It would follow the established road from Tucson west to Gunsight Well and then travel near and almost parallel to the Mexican border over

existing roads and trails to a junction with U.S. Highway 80 a few miles east of Yuma. This road plan has the backing of the Pima County Board of Supervisors.—*Yuma Sun*

• • •

Herman E. O'Harra has been appointed superintendent of the Hopi Indian Agency at Keams Canyon, Arizona. He succeeds Clyde W. Pensoneau who has been transferred to the Indian Bureau's extension staff in Washington.

• • •

CALIFORNIA

Cavalcade Pageant Moved . . .

CALEXICO—The pageant presentation of the 1956 International Desert Cavalcade will be moved to Imperial, directors of the Cavalcade Association decided. Other Cavalcade events such as the International School Children's Parade, Western Parade, Mexicali Day and the chuckwagon breakfast will be retained in Calexico and Mexicali. The completely revamped pageant will be staged the weekend of October 26 at Imperial's Mid-Winter Fairgrounds. Directors unanimously adopted a motion to hire a writer-director to write a new script and produce the show.—*Calexico Chronicle*

• • •

Museum Installs Locomotive . . .

RANDBURG—The Desert Museum at Randburg, a branch of the Kern County Museum, recently installed a five-ton narrow gauge locomotive formerly used in the famous Yellow Aster Mine. According to director Richard C. Bailey the little engine was placed in service during the peak of the gold producing days of the early 1900s. It is the gift of the Big Butte Mining Company, present owner of the Yellow Aster property.

Back Niland-Blythe Road . . .

INDIO—Supervisors of Riverside and Imperial counties met in Indio recently and pledged a united effort to secure a highway link between Blythe and Imperial Valley to replace the present road the Navy has seized. Imperial County officials are seeking support in their efforts to convince the Federal Government it should help finance an alternate route to replace the one they have closed. Imperial wants the government to spend \$700,000 for a paved road between Brawley and Glamis. The county will complete the road from Glamis north to the Palo Verde Valley.

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Sees City of Factories . . .

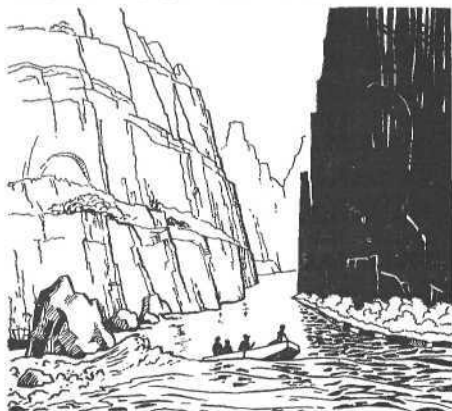
PALMDALE—An Antelope Valley industrial empire so vast as to stagger the imagination was predicted for the near future by Roy M. Hagen, past president of the Los Angeles Chamber of Commerce and present chairman of its industrial plant location committee. Hagen said it was his job to keep industry in Los Angeles County while at the same time dispensing new factories to escape congestion with resulting smog conditions that now prevail in Los Angeles. He pointed out that the Antelope Valley, on the Mojave desert in northern Los Angeles County, is the one remaining frontier in the county for industry.—*Valley Press*

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Blythe Bridge Plans Told . . .

BLYTHE—The State Division of Highways announced plans for a new crossing of the Colorado River Bridge on U.S. Highway 60-70 east of Blythe. California's Highway budget for the 1956-57 Fiscal year contains an item of \$595,000 for the state's share of the new bridge and the approaches on the California side. The existing bridge was constructed in 1927. The new structure is to be located 60 feet upstream from it and will be a deck plate girder type approximately 1050 feet long. Width of the new bridge will be 28 feet between curbs and the approaches will be constructed on flat grades with greatly improved sight distance, the Highway Department said.

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New Country Club Started . . .

INDIAN WELLS — Work was started in early February on a \$2,500,-000 country club, residential and commercial development at Indian Wells. The project, backed by many well known TV and movie celebrities and wealthy businessmen, calls for the construction of an 18-hole golf course, clubhouse, motel units, duplexes and 125 club homes. The club will operate on a semi-private rather than on an exclusive basis. — *Coachella Valley Sun*

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History Book Planned . . .

CALEXICO—Preparation for "The First Fifty-Five Years," a new history of Imperial Valley, will soon be started, author Otis B. Tout of San Diego announced. Publication is planned for the Christmas season of this year and the new book will follow the pattern of "The First Thirty Years," Tout's history published in 1931.—*Calexico Chronicle*

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Roadside Parks for Desert . . .

INDIO — Four roadside recreation parks will be built along Highway 60 between Blythe and Indio, as part of the state-wide program. One of the parks will be in the Indio vicinity, another west of Desert Center, a third east of Desert Center and the fourth in the Blythe area.—*Date Palm*

Imperial Farm Sizes Gain . . .

EL CENTRO — Imperial Valley's farms are becoming fewer in number and increasing in size, with tenant-operated farm numbers also showing increase. Imperial Irrigation District released the following figures: 6139 farms in 1954 compared to 5488 last year; average farm size in 1954 was 74.73 acres, in 1955 90.40 acres; in 1954 3606 or 58.7 percent of the farms were owner-operated, last year 3058 or 55.72 percent of the farms were owner-operated.—*Yuma Sun*

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NEVADA

Park Plan Offered . . .

WHITE PINE—A proposal to work for years if necessary to create a national park in eastern White Pine County which would include Lehman Caves National Monument, Mt. Wheeler, and other scenic high country of the Snake Range, was approved by members and directors of the White Pine Chamber of Commerce and Mines recently. Presentation of the proposal for a national park—referred to thus far as the Great Basin Range National Park — was made by State Senator Charles D. Gallagher, chairman of the local group's tourist development committee.—*Ely Record*

Lake Mead Changes Proposed . . .

BOULDER CITY — Legislation to place full administration of the Lake Mead national recreational area under the National Park service, reduce its size and increase recreation development has been introduced by Senator Alan Bible. Administrative problems of control over the nearly 2,000,000 acre area have arisen since its withdrawal by executive order in 1930 for reclamation purposes, Bible said. The Bible bill would redescribe the area's boundaries, eliminating 162,560 acres from the present 1,951,928 acres. This measure will fully protect water-control project purposes, encourage greater development of the tremendous recreational advantages and preserve the geological, biological and archeological interest sites, Bible added. — *Caliente Herald*

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Centennial Plans Told . . .

CARSON CITY—A Nevada Silver Centennial Committee has been formed in Carson City to make plans for a state-wide observance in 1959 of the 100th anniversary of the discovery of silver on the fabulous Comstock Lode. Named as chairman of the group is Roy Hardy, prominent Nevada mining man and a member of the University of Nevada board of regents.—*Nevada State Journal*

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WELL ESTABLISHED Gem and Mineral business on good highway location. Must sell on account of health. P. O. Box 276, Salome, Arizona.

WANTED—Five to Ten acres of desert land along Colorado River between Blythe and Needles. Must have water available. Beryl Linville, Realtor, 3926 Woodruff Avenue, Long Beach, 8, California.

LIMESTONE DEPOSIT for sale. Reasonably priced. One of the largest deposits in Southern California. Three miles from Santa Fe RR near Chubbuck. Consisting of 320 acres all limestone. No obstructions of any kind. Level approach to deposit. Estimate 20 million tons of limestone. For information write Thos. J. Feely, Box 181, Capitola, California.

MISCELLANEOUS

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HARDY CACTUS, some rarities, write for price list. Nancy Duck, 507-30 Road, Grand Junction, Colorado.

SECTIONIZED COUNTY MAPS — San Bernardino \$1; Riverside \$1; Imperial 50c; San Diego 50c; Inyo 75c; other California counties \$1.25 each. Nevada counties \$1 each. Topographic maps of all mapped areas. Westwide Maps Co., 114 W. Third St., Los Angeles, California.

PARTNER WANTED. Will give half of 15 uranium claims for the price of 3 core drill holes perhaps 500-600 feet deep each. Claims located in trough or channel where two synclines cross. Where strata exposed about couple of miles away and on two sides, is low grade uranium ore. On third side and at several miles where strata exposed is high grade uranium ore. Mountain on fourth side. All hills near location bright red except over trough where hills are pure white, believed bleached white by radon gas from underground. Sincerely believe there will be fabulously rich uranium ore in trough. May cost as much as \$8000 to core drill three holes, depending on how deep must go. May be less. Only those with a core driller or cash need investigate. These claims not for sale until drilled. Agatha Mannering, 626 N. 400 W., St. George, Utah. Phone 483-J.

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JEWELRY FINDINGS, wholesale—earring backs, jump rings, fine chain, clasps, etc. Write for samples and price list. N. M. White Company, 4314 Beverly Blvd., Los Angeles 4, California.

Cacti Diggers Fined . . .

BOULDER CITY—Three North Las Vegas men were fined \$15 each in federal court for digging up and removing barrel cacti from the Stewart's Point Road in the Overton District within the Lake Mead National Recreation Area. District Park Ranger L. J. Mitchell apprehended the men with a truck load of cacti. The violators intended to sell the plants for use as ornamental plantings in a new housing tract within the Las Vegas area, it was reported. "Plants and other attractions within the Lake Mead National Recreation Area are for the enjoyment and benefit of all of the people of the nation and not for the use of selected individuals," Superintendent Charles A. Richey declared.

State Seeks Park Site . . .

WHITE PINE—Negotiations to secure ownership or long-term lease of acreage at the Ward Charcoal Ovens and Willow Lake for the purpose of maintaining this area as a Nevada State Park have been launched by the State Park Commission. The current move for protection of the charcoal ovens has long been desired by local service clubs.—*Ely Record*

Gambling Palaces in Trouble . . .

LAS VEGAS—Las Vegas gamblers reported 1955 was their richest year but the profits were apparently spread too thin for many casinos are in financial trouble. Three multi-million-dollar casinos had to close their doors while three others postponed gala openings and two more are engaged in legal battles. Hotel operators, businessmen and gamblers place the blame squarely on the high cost of entertainment with \$20,000,000 siphoned off by big-name stars in 1955 compared to half that amount in 1954. Meanwhile, statisticians report that the average woman who gambles is a 38-year-old housewife who will quit if her losses reach \$14.—*Yuma Sun*

Traffic Deaths Studied . . .

CARSON CITY—Nevada's high traffic death toll has usually been blamed on the heavy out-of-state traffic, but the Nevada Highway Patrol reports that Nevadans have contributed their share to the bad driving record. Deaths last year numbered 174 and 92 of these were Nevadans. Another thing the NHP study points out strongly is the startling preponderance of single-vehicle accidents. There were 329 of these compared to 190 crashes involving two or more cars. A third sweeping fact in the report is the reason behind accidents—first, speed; second, "highway hypnosis"; and third, alcohol.—*Nevada State Journal*

NEW MEXICO

Rabid Bats Discovered . . .

CARLSBAD CAVERNS—Rabies, possibly transmitted from the dreaded vampire bat, has been discovered among the millions of bats at Carlsbad Caverns. It was a rabies epidemic which caused the death of hundreds of the Cavern bats in August and September of last year, the State Department of Public Health revealed. No human was reported bitten by a rabid bat during the epidemic at the famed caverns, the department said. For that matter, no visitor to the Caverns has ever reported being bitten by a bat. The department cautioned people in the area not to pick up dead or dying bats or handle live ones. Carlsbad bats migrate great distances into Mexico each winter. The nearest known area of vampire bat rabies in Mexico is some 300 miles from the border. An important aspect to the discovery of rabid Cavern bats is the possible transmission of rabies to other animals.—*Alamogordo Daily News*

Vote Notices in Spanish . . .

SANTA FE—The attorney general's office has clarified the state's election laws by ordering election proclamations to be published in Spanish in at least four newspapers of general circulation within the state. In addition, county clerks must publish certain information in Spanish within each county. In event no local newspaper handles Spanish publication, the information must be posted in two conspicuous places.—*New Mexican*

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Pueblos Condemn Bar Owners . . .

SANTA DOMINGO—The All Pueblo Council has condemned non-Indian bar owners for contributing to the rise of alcoholism and crime among Indians. The council resolved to take the problem up with Governor John F. Simms and State Liquor Director Hilton Dickson. The Council claims that some bar owners are selling alcohol to teenagers and it criticized the state for allowing at least six bars to relocate on the fringe of Indian land following the repeal of the prohibitive statutes.—*New Mexican*

Pheasant Numbers Decline . . .

ALBUQUERQUE—The Chinese ring-necked pheasant may soon be a thing of the past in New Mexico. Levon Lee, director of game bird management for the state Department of Game and Fish, estimated the average cost of each bird stocked in the state at \$10. He said the costs run from \$46 per bird in some areas such as the Roswell-

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Lovington region, to approximately \$6 per bird in the Taos area. Two plantings of the hardy Middle Eastern chukars have been made in the state, one in the Gila Wilderness Area and another at the head of Conchas Lake.

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Game management men say these birds are doing extremely well. On the other hand, the pheasant is fighting a losing battle in the state.—*Alamogordo Daily News*

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White Sands Gets Antelope . . .

ALAMOGORDO—The State Game and Fish Department recently made known that 263 antelope were trapped in areas southeast of Alamogordo and northwest of Roswell. Of that number, 196 were transported to suitable new ranges on White Sands Proving Ground, 58 were released at the trapping site because they were predominantly bucks and not needed in the new areas, and nine were killed in the trapping process.—*Las Cruces Citizen*

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UTAH

Park Improvements Slated . . .

WASHINGTON, D. C. — Large-scale extensive improvements for Utah's two national parks and six of her national monuments are promised under the administration's proposed 10-year program for the National Park Service. Known as Mission 66, the program calls for a revised national parks budget of \$66,238,000, a 25 percent increase in current expenditures. Furthermore, it provides for the expenditure of \$160,000,000 on the nation's park highways and roads between now and 1966. Under the program, \$489,000 has been allocated for Dinosaur National Monument for a new visitors center, utilities, employee housing, relieving fossils in the quarry area and reconstruction of the road to Split Mountain. Improvements planned for Cedar Breaks National Monument include highway extension and possibly an additional camp ground at Duck Creek. Capitol Reef, Arches and Timpanagos Cave National Monuments' improvements scheduled are new visitors centers, museum, road improvement and other improvements for which plans have not been completed.

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Commodity Plan for Navajo . . .

MONTICELLO — The Grand and San Juan Counties Department of Public Welfare announced the signing of a contract with Marvin Walter, director of the Seventh Day Adventist Mission at Monument Valley, and the Rev. F. C. Patterson, Missionary in Charge, Oljato Christian Mission (Presbyterian) at Moonlight Wash, for the distribution of commodities to Navajo Indians. Distribution will be coordinated through the County Welfare Department and shipped to the Missions where personnel has volunteered to distribute these supplies to the Indians.—*San Juan Record*

Mormon Indians Organize . . .

SALT LAKE CITY — Representatives of a number of Indian tribes elected Ray M. Pawiki, a Saltair Hopi, acting chief of the organization. Named as a committee of three were Samuel P. Shing, Brigham City, also a Hopi; Joe Gutierrez and Gene Naranjo, both of Tooele and members of the Tewa tribe. Acting Chief Pawiki and his committee will meet in the near future to formulate bylaws, choose a name and set organizational machinery in motion for election of permanent officers. The group consists of Hopi, Tewa, Navajo, Shoshone, Ute, Catawba and Sac Fox tribesmen. Purpose of the organization is to promote the ideals of brotherhood and provide financial assistance for missionary work and to send needy Indian students to universities of their choice. Members belong to the LDS faith.—*Salt Lake Tribune*

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Pioneer Sons' Trek . . .

SANTA CLARA — Members of the Dixie mission chapter of the Sons of Utah Pioneers and invited guests hiked up the Santa Clara Creek recently to witness the carving of a member's name beside that of his father which had been placed there over a century ago. G. P. Hardy supervised the carving of his initials by his son, Gus Hardy, beside those of his father, A. P. Hardy, chiseled into the huge slabs by the early Utah pioneer in June, 1854.—*Washington County News*

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Zion Plan Offered . . .

WASHINGTON, D. C. — A bill to make Zion National Monument a part of Zion National Park was scheduled for introduction in the Senate by Senator Wallace F. Bennett of Utah. The senator said the action, sought by residents of southern Utah and the National Park Service, would increase the size of Zion Park to 48,414 acres and would facilitate development of now largely inaccessible areas as a scenic attraction.—*Salt Lake Tribune*

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Polygamy Controls . . .

SALT LAKE CITY — Utah's chief law enforcement officer called on 800 elected officials of the state's 29 counties to make every effort to stamp out polygamy in Utah. "Unlawful cohabitation, plural marriage and polygamy are on the same footing as grand larceny in the Utah Criminal Code," said Utah Attorney General E. R. Callister to the annual convention of Utah Association of County Officials. "We regularly punish persons convicted of grand larceny and I am sure we would not want children brought up in homes where parents engage in grand larceny and advocate same to their children," Callister added.

MINES and MINING

Bauer, Utah . . .

Reconstruction and improvement of the Bauer coal-resin plant of Combined Metals Reduction Co. is under way, E. H. Snyder, company president, announced. Simultaneously, Oscar A. Glaeser, vice president of United States Fuel Co. confirmed that his company plans to build a resin flotation plant at Hiawatha, Carbon County, to supply the new Bauer installation with its needs. The new plants would replace those of Combined Metals which were destroyed by fire at Bauer in late September of last year. —*Salt Lake Tribune*

Victorville, California . . .

Eminent domain suit for a branch railroad right-of-way through Lucerne Valley to the site of the future Permanente Cement Co. plant on Cushenberry Grade has been filed in San Bernardino Superior Court by the Atcheson, Topeka and Santa Fe Railway Co. The complaint asks for condemnation of lands for a right-of-way stretching from the main railroad line through Hesperia and extending along the southern edge of Lucerne Valley. The branch railroad line will be almost 30 miles long and will be used for carrying in machinery and materials for the Permanente plant and taking out quarried limerock for the Kaiser Steel Mill in Fontana. —*Barstow Printer Review*

Hot Creek, California . . .

Expansion of production facilities of Huntley Industrial Minerals, Inc., to meet increased demands for non-metallic products was announced this week by Wright Huntley, president. A new crushing, screening and calcining plant will be erected soon about a quarter-mile north of Hot Creek Fish hatchery in Mono County to process high-quality clay from nearby Little Antelope Valley. The deposits are located three miles east of Casa Diablo. For the past four years the Huntley firm has hauled the clay to their Laws mill for processing. —*Inyo Register*

Phoenix, Arizona . . .

Kennecott Copper Corporation will build a \$5,000,000 ore-processing plant at its Ray Mines Division in Arizona that will give it an additional two pounds of copper per ton of ore. The average copper content of ore mined in the U.S. has been sinking steadily. In the 1920s there were, on the average, 40 pounds of copper to the ton; now this is down to about 18 pounds. As producers turn to leaner ores, they are pushing hard to recover as much of the copper content as possible. Large investments for a relatively small gain in the recovery rate are now good business. Kennecott's Arizona holdings contain about 21 pounds of copper to the ton. The new plant will raise recovery from the current 17 pounds to 19 pounds per ton. —*Pioche Record*

Phoenix, Arizona . . .

Arizona copper producers shattered all records for this or any other state last year. Copper output was worth more than \$340,000,000, representing about 45 percent of the total domestic production in the nation. The total value of non-ferrous metals produced in Arizona during the year was about \$360,000,000, or three times the World War II high of \$121,000,000. —*Yuma Sun*

Carson City, Nevada . . .

A production of 96,000 barrels has been achieved since discovery of Nevada's first commercially productive oil well in March, 1954. An output of 33,000 barrels was recorded from the single well in the first nine months and total production for 1955 for Nevada's infant oil industry was 63,000 barrels. Eagle Springs No. 1, Nevada's first oil well, continues as the chief producer but two nearby producing wells this past year have bolstered production considerably. —*Nevada State Journal*

Whitney, Nevada . . .

Southern Nevada has a new industry in the Las Vegas Brick and Tile Co. of Whitney. Situated near the steam power plant at Whitney, this enterprise is the first to make bricks in this area, according to Frank Aregood, president. Scheduled for an initial output of 90,000 red vitrified bricks per day, the new plant will use blue shale mined at Jean, Sunrise Mountain and Dry Lake. —*Pioche Record*

Carson City, Nevada . . .

An estimated value of \$90,400,000 was placed on Nevada's 1955 mineral production. Copper led all other minerals with a value of \$57,700,000 followed by Tungsten concentrates at \$23,000,000. Other minerals and their values: gold, \$2,760,000; iron ore, \$2,385,000; mercury, \$1,566,000; silver, \$748,000; lead, \$682,000. —*Nevada State Journal*

Lovelock, Nevada . . .

Leasing of 160 acres of perlite ground with prospects good for the erection of a perlite plant in Lovelock, were reported by Mrs. Charles Chester. Lessee is the International Banning Co. of New York. The deposit is located at the north end of Seven Troughs range in Egbert's Canyon. The deposit is in the proposed Navy aerial gunnery range. —*Humboldt Star*

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Pioche, Nevada . . .

Minerals Engineering Co. of Grand Junction, Colorado, has taken option on an unusual gold-uranium property of the Atlanta Gold and Uranium Co., 30 miles north of Pioche, Nevada. Under the option agreement, the Grand Junction firm will investigate commercial possibilities of transforming the underground property to an open pit producer of gold and uranium. On the basis of preliminary reconnaissance, there are about 1,400,000 tons of material in the deposit. —*Salt Lake Tribune*

Salt Lake City, Utah . . .

Valuation of minerals produced in Utah last year was \$326,400,000, according to a preliminary survey of the United States Bureau of Mines. This compares with \$257,800,000 in values mined during 1954, and again underscores the fact that the minerals industry far outweighs any other in wealth-producing volume in the state. Leading metals and their values: copper, \$171,300,000; coal, \$43,370,000; iron ore, \$24,130,000; gold, \$15,500,000; silver, \$5,600,000; lead, \$14,500,000; zinc, \$10,250,000; oil, \$4,950,000. —*Salt Lake Tribune*

Blue Diamond, Nevada . . .

Blue Diamond's production of gypsum products is now the largest in the history of that company. In May, 1955, 37,000 tons of gypsum were mined and processed at the company's processing plants at Blue Diamond, Clark County, Nevada. Principal products are plaster and gypsum board. Shipments are averaging over 900 carloads a month, most of it going to the Los Angeles metropolitan area. —*Humboldt Star*

Albuquerque, New Mexico . . .

Intent of the new Federal mining law, according to Dean Cutler, supervisor of the Lincoln Forest, is to aid in clearing up mining claims filed prior to the signing of the law which are hampering proper administration of the forest lands pending the time such claims go to patent. The law will in no way stifle or handicap the mining industry or the prospector, in the view of the U.S. Forest Service. Under the law, claims located prior to July 23, 1955, retain their status until action is initiated to process them in accordance with the provisions of the new law. The Forest Service plans to examine areas of 50,000 to 150,000 acres at a time. All active claims in these examination areas will be noted. —*Alamogordo Daily News*

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BOOM DAYS IN URANIUM

Federal Budget Allocates Billion Dollars For 1957 U-Ore Buying

A billion dollar uranium ore buying program was announced by President Eisenhower in his budget message to Congress. This would be the largest federal outlay in history for nuclear raw material and some 20 percent more than is being spent at the present time. A breakdown of the budget for the Atomic Energy Commission shows plans to spend \$1,012,582,000 in the next fiscal year on "source and special nuclear materials."

"Greater quantities of uranium ores and concentrates will be purchased and production from the commission's plants will increase but at reduced unit costs as the expanded facilities, soon to be completed, come

into full operation. Research and development work in numerous areas, both civilian and military, will be expanded," the President's message said.

"Greater emphasis is being placed on the development of a larger variety of nuclear propulsion plants. To this end, funds are included under proposed legislation for additional development facilities at the National Reactor Testing Station in Idaho." — *Salt Lake Tribune*

AEC Terms Ambrosia Lake Discovery "Major"

The Atomic Energy Commission termed the Ambrosia Lake, New Mexico, uranium discovery a "major discovery" in its 19th semiannual report to Congress. Prior to the announcement, AEC Chairman Lewis L. Strauss told New Mexico newsmen he expects New Mexico to become the nation's leading uranium producer. The Ambrosia Lake reserves may amount to several million tons, the AEC said.—*New Mexican*

Bureau of Mines Offers Free Uranium Pamphlet

The U.S. Bureau of Mines announced plans for publication of a series of free pamphlets on uranium and the first pamphlet is now available.

Written by W. L. Dare, R. A. Lindblom and J. H. Soule, it describes in detail the equipment and methods used in prospecting, developing and mining uranium. Typical cost figures for many functions are given and the geology of the Colorado Plateau and a brief history of uranium mining in that district are included.

Copies can be secured by writing to the Bureau of Mines, Publication Distribution Section, 4800 Forbes St., Pittsburgh 13, Pennsylvania, requesting the publication I. C. 7726, "Uranium Mining on the Colorado Plateau."

Open Pit Uranium Mine At Tonopah Proposed

A huge open pit uranium operation that may herald Tonopah's mining resurgence became the avowed goal of multimillionaire uranium king Jack C. Turner with the signing of a sheaf of legal documents — and checks—recently. The deal put 52 patented mining claims owned by Victor and Dominic Lambertucci at the disposal of Turner and his associates on a long-term lease agreement. In with Turner as associates are Raymond E. White, Pasadena, California, oil magnate, and Mitchell M. Williams and Kedrick M. Bailey, both of Moab, Utah.

Several Uranium Mills Proposed for Plateau

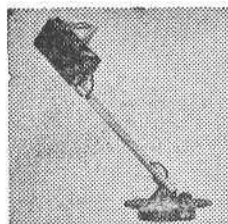
Construction of several new uranium mills in Utah and expansion of an existing mill at Salt Lake City have been proposed, the Grand Junction Operations Office of the Atomic Energy Commission confirmed. Some of the proposals are regarded in a "completed" stage which means necessary financing, ore reserve and metallurgical requirements are assured. Other proposals are in various stages of discussion and negotiation.

Among those companies listed as submitting complete proposals are: Four Corners Uranium Corporation and Union Carbide Nuclear Co., both of Green River, Utah; New-Shat Corp., Newmont Mining Co., New Jersey Zinc Co. and The Texas Company, at Mexican Hat, Utah; Nuclear Metals Corp., Denver, Colorado, at White Canyon, Utah.—*Salt Lake Tribune*

Uranium ore bootleggers are the target of the newly organized Uranium Ore Haulers Association, Inc., of southern Arizona. Directors have gone on record supporting new legislation to crack down on violations by bootleggers and other unauthorized ore haulers.—*Salt Lake Tribune*



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U-Ore Extension Seen With Qualifications

Continuation of a purchasing program for domestically-produced uranium ores past the March 31, 1962, cut-off date is assured, according to reliable authorities, reports *Salt Lake Tribune* Business Editor Robert W. Bernick. But, he adds, the extension probably will be ringed with qualifications.

A flat four year extension was to be announced recently by the AEC's raw materials division, but was held up pending study of a report by the panel on the Impact of the Peaceful Uses of Atomic Energy.

The Panel, headed by Santa Fe, New Mexico, publisher Robert McKinney, made its report to Congress' joint committee on atomic energy, and the AEC deferred making the recommendation on extension of the domestic buying program to 1966 until an unofficial review of the citizen's panel could be had.

Full statement of the McKinney report is that "military requirements for uranium are the present reason for the ore-price guarantees. A free market should be the objective for the era of expanded peaceful uses (of atomic energy) without guarantees.

"As an alternative to price guarantees in accomplishing the transition to a free market, tonnage guarantees based upon military requirements should be considered.

"Any guarantees should be reviewed annually and extended on a five-year, moving basis only if justified by military requirements," the report states.

This means that in 1957, the AEC would consider fully the military requirements of 1962 before negotiating for ore purchasing and for concentrates from any new mills to be established.

Magic Uranium Company announced the discovery of a uranium deposit of at least 20,000 tons on the company's Picket Corral No. 4 property in Montrose County, Colorado. Jack C. Turner, operations superintendent, estimated the gross value of ore blocked out to date at approximately \$600,000.—*Dove Creek Press*

Spencer Uranium Corporation announced conclusion of a contract with Continental Uranium Corporation of Chicago and Grand Junction, Colorado, which could lead to exchange of its principal properties in Monument Valley, Arizona, for Continental Stock.—*Salt Lake Tribune*



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The Securities and Exchange Commission issued a revised version of proposed new rules to protect investors from fraud and misrepresentation in uranium and other promotional stock offerings. The amendments, under study since last spring but frequently revised, tighten up requirements for the registration of issues under \$300,000 by companies in the United States and Canada.—*Salt Lake Tribune*

New Buying Firm Named by Atomic Energy Commission

Lucius Pitkin, Inc., a firm of metallurgical chemists and consultants, will succeed the American Smelting and Refining Company as the AEC's ore-buying and concentrate-receiver. The contract between the AEC and Pitkin is on a cost-plus-fixed-fee basis. The contractor will conduct, on behalf of the AEC, the Western Uranium Project, with operations involving buying uranium-bearing ores; receiving, weighing, sampling and assaying concentrates; and planning and executing administrative, clerical, technical and other necessary duties in connection with these operations.

Lucius Pitkin, Inc., is a long-established company with 70 years experience in the fields related to the requirements of the commission project.—*Dove Creek Press*

Colorado River Mine Yields First U-Ore

The Chief mine, high on the rimrocks overlooking the Little Grand Canyon of the Colorado River near Moab, has yielded its first uranium ore, thus placing Radiore Uranium Co. on the list of producing corporations. James R. Downing, president of Radiore, said 40 tons of ore have been delivered to the AEC mill at Monticello.—*Dove Creek Press*

The Indian Service announced the winning bidders who have agreed to pay a total of \$170,946 for uranium rights on 26 tracts of Navajo Indian Reservation land. The money will go into the tribe treasury. The tracts are located in the Monument Valley area and total 13,744 acres. They had been withdrawn by the federal government for mineral exploration, then thrown open for public bidding.—*Salt Lake Tribune*

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GEMS and MINERALS

Tumbling Technique Changes Improve Polish, Save Time

Hexagonal, steel, unlined tumbling drums are still the accepted machines with which to do primary grinding of "baroque" gems, using abrasive grits, preferably the silicon-carbide ones of 80, 220 and perhaps 600 grain sizes, reports Harry L. Zollars, veteran editor of the El Paso, Texas, Mineral and Gem Society's *The Voice*.

Many of the more successful tumbler operators let the 80 grit wear down to an impalpable powder in the hex drums by not adding any fresh grit during the latter stages of the primary smoothing, avoiding the expense and time involved when the finer grits are used, especially in the processing of the quartz family of rocks, Zollars reports.

From this point in the process, a new technique turns to a round type of drum, lined with rubber, cork, canvas or felt, for the final stages of smoothing and polishing, especially with the softer and more difficult to polish stones. Desired tumbler speeds are

much slower than were formerly considered proper, in order to avoid damaging contacts between the fragile pieces.

The appearance of Linde Ruby Powder on the market at popular prices has made it possible for rockhounds of ordinary means and in the hobby for fun and not a monetary gain, to secure fine polishes upon tumbled gems with much less expense and time. After the rocks have been ground smooth in any sort of machine, Zollars continues, they are placed in the lined round drums, with tin oxide as the most popular polishing agent to which is added varying proportions of Ruby Powder depending on the size of the drums. This varies from a teaspoon of Ruby Powder for small drums to as much as a half cup for larger drums. Only enough water to be seen rising among the stones should be used. It is better not to use drums which are too large in diameter to finish the softer stones, and the products of a large drum should be divided into smaller portions.

If lined drums are used in the grinding process, different ones should be used for the high polishing for it is almost impossible to remove the abrasive grains from a lined drum. A few coarse grains of silicon-carbide may make it impossible to procure a satisfactory polish. The stones are left in the mixture of tin oxide and Ruby Powder as long as necessary to procure a high gloss, it having been determined that the reverse action on the stones does not take place nearly as quickly as it does without the Ruby Powder. However, the operator should watch carefully to see if the stones are gaining in polish or growing more dull. If the stones are becoming dull, the polishing or burnishing mixture should be discarded and a new one prepared.

GEM CARE IMPORTANT FOR LASTING BEAUTY

Ralph E. Hagemier of the Indiana Geology and Gem Society of Indianapolis believes too little attention is given to the care of gems and jewelry.

"It is a pity that much jewelry, made with loving care, should be subjected to such abuse as we have sometimes seen," declared Hagemier.

The little nicks and scratches that mar and deface gems go unnoticed. The wind-blown dust that settles on jewelry may sometimes consist of small particles of quartz, capable of scratching anything of equal or lesser hardness. Even the hardest gems are not immune to damage from this source. Dust may also contain grit of garnet, carborundum, etc. Harm is often done unknowingly when the gem is wiped with a dry cloth or tissue, resulting in multiple scratches on a once beautiful finish.

For quick cleaning, flush your jewelry under a faucet for a few moments and then dry with a clean cloth, advises Hagemier. Occasionally a more thorough cleaning with soap and water and an old toothbrush is required to remove the film of dried perspiration, grease or soap scum which dims the sparkle of the gem. Care must be taken not to force bristles under a mounting prong or pull the brush so as to loosen a set. Give special attention to the backs of open mounted stones and to intricate, dirt and lint-free cloth. Jewelers sell cleaning solution which has one advantage over soap and water: it soaks dirt out of places otherwise hard to clean, such as between stone and bezel. Used as directed it will help keep your gems bright and shiny.

Some gemstones are not hardy even under normal wearing conditions, but because of their beauty or uniqueness, lapidaries cannot resist mounting them. More thought should be given to using these stones in ways less given to hard wear. If you have gems you value highly but which are comparatively soft or easily fractured, spare them from ring or bracelet punishment. They will do far better in earrings, tiepins, brooches or in a display cabinet.—*Geologem*

NEW ENGLAND COLLECTING AREAS MAPPED IN BOOK

From the International Gem Corporation comes an interesting booklet, *Field Guide to Gem and Mineral Locations in North-East U.S.A.*, which will prove valuable to New England-bound rockhounds who plan to collect and explore along the way. The booklet, written by J. N. Convery, is definitely geared to the amateur rockhound.

Bulk of the publication is made up of charts, drawings and maps, all well done and easy to read. Serious mineralogical discussion is left to other sources. The booklet is also sprinkled with humor—a necessary part of any hobby.

Published by International Gem Corp., 15 Maiden Lane, New York 38, N. Y., 40 large eight and a half by 11-inch pages, maps, charts, drawings; paper cover; \$2.00.

The San Jose, California, Lapidary Society is holding its 11th annual gem show April 21-22 in the Women's Physical Education Building, San Jose State College. — *Lap Bulletin*

Officers of the Southern Siskiyou, California, Gem and Mineral Society are Fern Dunlap, president; Primo Martini, vice president; Irene Correa, secretary-treasurer; Elden Poe and John Van Keuren, directors; and Clyde Browning, federation director.

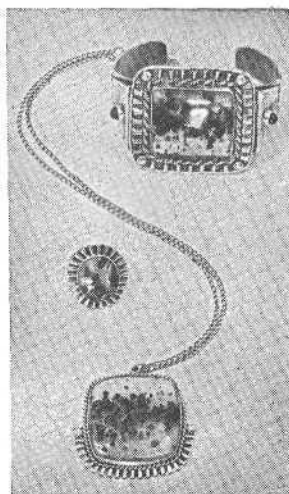
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HELPFUL HINTS FOR THE AMATEUR JEWELRY MAKERS

Here are some hints for jewelry makers, suggested by E. F. Tuttle of North Hollywood, California.

If you wish to transfer a design on paper to silver, rub the back of the paper with ocher on a small rag. Then place the paper over the work and trace in the usual manner.

Filing the handle of a tooth brush to a rounded chisel shape, produces a good tool for flattening pieces of sheet stock that have humps in them. Rub the flaw with the tool on a smooth, flat surface.

Scribers and similar small tools can easily be made from discarded dental tools.

Flake shellac is a good cement for fastening pins or screws into stones. Use a piece of iron wire mounted in a handle and heated to coat the inside of the hole in the stone, then apply shellac on the pin—heat both and press together.

Burnishers can be made from old files by grinding off the teeth and grinding to suitable shape. A good shape is one that is square across the end which makes it useful in closing the bezel around a stone when there are parts close to the bezel that interfere with the use of ordinary burnishers.

In burnishing scratches out of a piece of silver, moisten the burnisher with detergent and water and there will be much less chance of tearing the surface of the work.
—*Lapidary Journal*

11-YEAR-OLD TELLS BASIC STEPS TO MAKE CABOCHONS

Janet Marie Hill, 11-year-old junior member of the San Francisco, California, Gem and Mineral Society, recently received high commendation for her school report on her hobby, lapidary. Janet tells how to make a cabochon in 11 steps:

1. Check rock for cracks or flaws. Mark them with aluminum pencil.
2. Draw design on stone with aluminum pencil.
3. Cut as close to the shape you want as possible with a small diamond saw.
4. Grind into exact shape on the grinding wheel.
5. Glaze the bottom of the cabochon. This is done by holding it to the side of the wheel.
6. Grind a tiny 45-degree angle around the bottom edge of the stone so it will not chip when mounted in jewelry.
7. Mark one-third of the way up on sides of stone and grind sides at a deep angle, and round off the top.
8. Dop the stone.
9. Sand out the scratches. Always work the bottom first. First use the rough sander—120 grit—and then the fine sander—220 grit.
10. Polish on a leather lap with tin oxide. After this operation, the stone is ready to be mounted in jewelry.
11. IMPORTANT — wash your hands between each step so sand is not carried from the sander to the polisher.—*The Mineralog*

The annual spring gem and mineral show of the Wichita, Kansas, Gem and Mineral Society will be held at St. Anthony's Recreation Center, April 21-22, Chairman J. Walter Fisher announced.—*Quarry Quips*

The annual gem and mineral show of the Eugene, Oregon, Mineral Club will be held at the Timber Building at the Lane County Fairgrounds on April 14-15. Otto Koenig, 125 Jeppesen Acres Drive, Eugene, is handling display inquiries.—*Lapidary Journal*

MISUSE OF TOPAZ TERMS . . .

Fullerton, California

Desert:

I would like to call your attention to a misuse of terms on page 40 of the January, '56 issue of *Desert Magazine*. The article refers to the distinguishing features between "quartz topaz" and precious quartz. Quartz and topaz belong to entirely different mineral groups, both in crystal form and chemical nature.

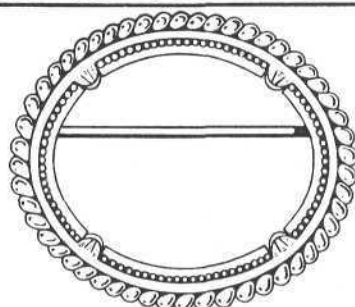
There are several types of quartz crystals and quartz colors. One would never

think of calling a stone "amethyst topaz," but it would be just as proper as calling citrine, "topaz." Anyone who is at all familiar with either quartz or topaz would not mistake one for the other. Perhaps the author of the item was referring to "Oriental Topaz," which is a term used by hawkers trying to peddle faceted citrine.

Good citrine should be called "citrine," good amethyst should be called "amethyst," and quartz, "quartz." There is no connection between quartz and topaz.

CHARLES A. KNOWLTON

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ROCKS—opposite West End Air Base, agate, woods, minerals, books. Local information. Ironwood Rock Shop, Highway 60-70 West of Blythe, California.

OPALS AND SAPPHIRES rough, direct from Australia. Cutting opal, 1 ounce \$5, \$10, \$20, \$30 and \$60. Blue sapphires, 1 ounce \$10, \$30 and \$60. Star sapphires 12 stones \$10, \$20, and \$30, etc. Post free and insured. Send international money order, bank draft. Australian Gem Trading Co., 49 Elizabeth St., Melbourne, Australia. Free list of all Australian stones rough and cut, 16 pp.

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LOOK—GOOD Tumbling Grade turquoise, some will cab, very little matrix. No green. Makes beautiful baroques. \$6 per pound F.O.B. Mountain Springs Gifts, Box 461, Jacumba, California.

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JEWELRY FINDINGS, wholesale — earring backs, jump rings, fine chain, clasps, etc. Write for samples and price list. N. M. White Company, 4314 Beverly Blvd., Los Angeles 4, California.

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RARE SAMARSKITE crystals. \$1.50 to \$4.50. Harold Groseclose, E. Center Street, Wickenburg, Arizona.

VISIT GOLD PAN Rock Shop. Beautiful sphere material, gems, mineral specimens, choice crystals, gem materials, jewelry, baroques, etc. Over 100 tons of material to select from. John and Etta James, proprietors. 2020 N. Carson Street, Carson City, Nevada.

Dean Norvell was recently elected president of the Lockheed Employees Recreation Club's Rockcrafters' Club of Burbank, California. Bud Hubbard will serve as vice president; Wally Fisher, corresponding secretary; Lillian Stevens, recording secretary; and M. H. Johnson, treasurer.

The 19th annual mineral and lapidary show of the Southwest Mineralogists will be held on Saturday, April 21, from noon to 10 p.m., and on Sunday, April 22, starting at 10 p.m. The show is planned for the Palestine Masonic Temple at 41st and Figueroa in Los Angeles. There will be no admission charge.

The Santa Monica, California, Gemological Society will hold a lapidary and mineral show on April 21-22. The affair is scheduled for Joslyn Hall, Lincoln Park, 7th Street and Wilshire Blvd., Santa Monica.



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Al Kilts, member of the Compton, California, Gem and Mineral Club since 1950, was elected president of that organization recently. Serving with Kilts will be Veryl Carnahan, vice president; Lydia Wilson, recording secretary; Emily Henninger, corresponding secretary; George Leach, treasurer; Clarence Chace, librarian; and Nina Krienkamp, historian.

• • •

Dates for the Texas Federation of Mineral Societies convention and show have been set for May 11-13. The affair will take place at the City Coliseum in Austin. — *Quarry Quips*

LAPIDARY and JEWELRY SUPPLIES

Chrome Oxide	1 lb. \$.80
Linde Ruby	1 lb. 2.00
Tin Oxide (optical grade)	1 lb. 1.50
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Linde A	1 oz. 1.25
Linde B	1 oz. 1.25
Damascus Ruby	2 oz. 1.00
Dop Wax	1 lb. 1.00
Jeweler's Red Rouge	1/4 lb. .20
White Rouge	1/4 lb. .40
4X White Diamond	1 lb. .50
Tripoli Block	1 lb. .35

JEWELRY TOOLS

Bench Vise, 1 3/4" Jaw	\$1.70
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Ring Sizer Set	1.75
Ring Mandrel Plain	4.50
Ring Mandrel Grooved	5.00
5" Pliers—Chain, round and flat	Pr. 1.75
Tap and Die Set, Swiss—46 Pieces	
.076 to .021 in Carry Case	8.75
ODORLESS Silver Oxidizer	1.00
Liquid Flux, 2 oz.	.35
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The following new officers were installed at a recent meeting of the Cheyenne, Wyoming, Mineral and Gem Society: Robert H. Woods, president; Gilford Alexander, vice president; Mrs. Rita Acree, recording secretary-treasurer; Miss Louise Raines, corresponding secretary; Adam Wensky and Kirby Olds, directors. Regular meetings are held the first Friday of each month and visitors are welcome.

The Stockton, California, Lapidary and Mineral Club and the Mother Lode Mineral Society will sponsor the San Joaquin Valley Gem and Mineral Show at Stockton on April 28-29. The fourth annual show will be held at the San Joaquin County Fair Grounds in the new agricultural building. Theme of the show, which is expected to contain 90 cases of amateur displays, is Jade. There will be no admission charge.

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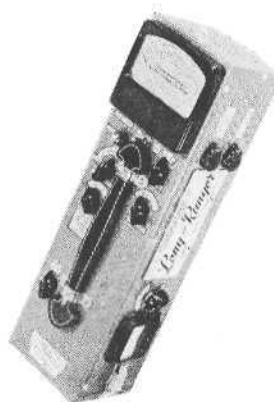
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- Big 4 1/2" external plug in meter for steering post of car or instrument panel of plane.
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- Sensitivity control switch to use 1, 2, or 3 tubes, depending upon the amount of sensitivity and range desired.
- No calibrated samples needed.
- Metal, perforated speaker cover all waterproof.
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- Used in Laboratories, schools, colleges, by geologists, engineers, chemists, etc.
- Fully guaranteed for one year, except batteries and tubes.
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Gold nuggets, placer pockets and veins, have also been detected by OREMASTERS, as well as Copper, Silver, Cobalt, Tungsten, Lead, etc. Due to the weakly Radio Active isotopes, that so frequently are found with these minerals, and the ability of OREMASTERS, to detect these isotopes and the various rays they are emanating.

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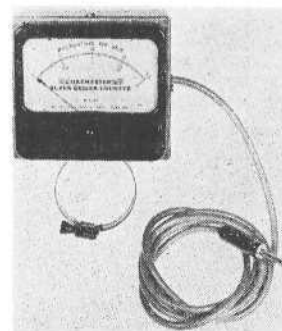
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SHAPE OF STONE ALONE DOES NOT MAKE CRYSTAL

To most people a crystal is a solid substance bounded by plane faces with definite geometrical shapes, such as triangles, parallelograms or trapezoids. This outer form is undoubtedly the most striking characteristic of the majority of crystals, but it is not the essential feature that distinguishes a crystalline substance from others. An exact model of a crystal made in glass remains glass, and is not a crystal, while a crystal of quartz ground down to a spherical form is still a crystal, although it has no plane faces. The

form, when it appears, is only the external evidence of the internal molecular structure, or rather of the atoms, that is the real criterion of a crystal. Thus even liquid crystals are known.

The term "crystal" is derived from the Greek word for ice. It was applied originally to the water-clear quartz, or rock crystal, of the Alps, in the belief that this was really ice that had been subjected to such intense and long-continued cold that it could not melt.—Eleanor Blackburn in the San Diego, California, Lapidary Society's *Shop Notes and News*

LINDE "A" RUBY POWDER \$3.75 PER LB.

For a **LIMITED TIME** the factory has asked us to sell "factory seconds" of this wonderful polishing agent which normally sells for \$20 per lb. Actual professional tests show this to be perfect for polishing cabochons and for use in tumbling barrels. **DEALERS WRITE FOR DETAILS. QUANTITY IS LIMITED** but we should be able to fill orders until the end of the year. 8 oz. \$2.00; 1 lb. \$3.70; 5 lbs. for only \$13.90.

TIN OXIDE \$1.50 PER POUND

If you buy \$5 worth of **Basic Lapidary Supplies** from the following list. A \$10 purchase entitles you to buy 2 lbs. **Tin Oxide** at \$1.50 per lb. A \$25 purchase entitles you to buy 5 lbs. of **Tin Oxide**.

NORTON CRYSTOLON GRINDING WHEELS . . .

Size	6x1/2"	6x1"	8x1"	8x1 1/2"	10x1 1/2"
80 grit				\$8.20	
100 grit	\$2.90	\$3.95	\$5.85	8.20	\$12.40
220 grit	3.25	4.30	6.45	9.00	13.65
320 grit	3.65	4.90	7.35	10.25	15.50
Shipping weight	2 lbs.	3 lbs.	5 lbs.	6 lbs.	9 lbs.
Crystolon Wheel Dressing Brick 6"x2"x1" \$1.05					

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Grit Size	1 Pound	5 lb. Lots	Grit Size	1 Pound	5 lb. Lots
80, 100, 120, 180, 220	\$.90	\$.56	Graded 400	1.09	.75
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DURITE (Silicon Carbide) ROLL SANDING CLOTH—

Dry Rolls—Available in 120, 220, 320 grits
 2" wide, 25 ft. long—\$2.15; 150-foot roll—\$ 9.60
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 10" wide, 5 ft. long— 2.15
 12" wide, 5 ft. long— 2.40

DURITE SANDING CLOTH in round disks . . .

Dry Type Available in 120, 220, 320 grits				Wet Type Avail. in 150, 220, 400, 600 grits			
6" discs	8 for \$1.10	25 for \$ 2.40		6" discs	5 for \$1.00	25 for \$ 3.90	
8" discs	5 for 1.10	25 for 4.40		8" discs	3 for 1.10	25 for 7.00	
10" discs	3 for 1.10	25 for 6.90		10" discs	2 for 1.15	25 for 11.00	
12" discs	2 for 1.10	25 for 10.10		12" discs	2 for 1.65	25 for 16.00	

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4" diameter by .025" thick	\$ 7.80	10" diameter by .040" thick	\$14.80
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8" diameter by .032" thick	10.40	16" diameter by .050" thick	28.60
8" diameter by .040" thick	11.40	20" diameter by .060" thick	39.20
		24" diameter by .060" thick	50.60

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Questions are on page 22

- 1—Death Valley.
- 2—Harold Bell Wright.
- 3—Death Valley.
- 4—Food.
- 5—White Mountains.
- 6—The Black Robes.
- 7—Trap beavers.
- 8—Salt.
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8"	11.50	10.44
10"	15.23	14.02
12"	22.26	18.53
14"	29.40	25.67
16"	32.76	29.08
18"	65.60	43.20
20"	77.95	51.87
24"	93.24	65.73
30"	149.62	125.73
36"	226.00	188.05

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and shields are furnished in 3 sizes and price ranges to suit your requirements. Water and grit proof.



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AMATEUR GEM CUTTER

By DR. H. C. DAKE, Editor of The Mineralogist

It has long been observed by those who have attempted to color agates by soaking in various solutions, both organic and inorganic, that invariably a portion of the slabs or partially finished cabochons will refuse to take on any color, no matter how long the soaking or boiling in the solution is continued. In some cases even an entire lot of agate may prove exceptionally stubborn, and the final results prove wholly negative. Or at best the agate may be colored on only a very thin layer at the surface.

In general it has been observed by many workers in this field that the agate from Brazil is more readily colored than the agate from other localities. But by no means does all the agate from Brazil yield to the beauty bath under the customary standard color treatment. In order to promote more ready absorption of color, the agate should be cut into sections on a general parallel plane with the orientation of the microcrystal structure. Others have offered the suggestion that since the molecules of most inorganic mineral salts are much smaller than the organic (like sugar and honey and aniline dyes) molecule, the agate would more readily take on color from the inorganic mineral salts.

It has also been suggested by some observers that since most agate has been cut with the use of petroleum products, like oil and kerosene, these should first be completely removed by either preliminary heat treatment or by soaking the sawed agate in suitable solvents. None of these methods appeared to answer the problem completely, with the exception of the preliminary heat treatment, before placing in the coloring solutions.

This latter observation led George O. Wild of Idar-Oberstein, Germany, to believe that possibly this preliminary heat treatment was effective, not due to the fact that it may or may not have removed the kerosene or oil, but that heating could cause a structural change in the agate itself, and thus permit much more ready absorption of the various coloring agents.

In order to test this theory, Wild conducted numerous experiments with sections of agate. He used many sections of agate, photoelectric cells, the petrographic microscope, thermostat controlled electric heating ovens and similar equipment to insure correct final conclusions.

Wild's experiments with agate included heating the material to various temperatures, up to and including 500 degrees Centigrade. From these experiments it was noted that agate sections heated to between 200 and 300 degrees Centigrade would afterwards take on various coloring agents much more readily. Below 200 and above 300 seems to have little effect on the ability of agate to absorb coloring agents. It is therefore assumed that the range between 200 and 300 degrees brings about a structural change

within the agate, and permits it to take on color much more readily.

Just what this structural change may be has not yet been learned, but it has been shown that the preliminary heat treatment is quite effective. The heat treatment may be carried out (on the sawed slabs) in any type of oven, where the temperature may be controlled within the limits stated, and where the agate may be heated and cooled gradually to prevent possible fracturing. Wild suggests that "It remains for the agate cutter to experiment further along these lines."

* * *

In the cabochon cutting of very dark colored gem minerals, like some varieties of garnet, the base or under side of the cabochon can be cut to a hollowed-out concavity, the upper portion of the stone being cut with a rather steep convexity. Some types of garnet, while of a pleasing color, are so lacking in translucency as to appear nearly black if left thick. The above design would naturally render the stone more translucent and lend more color, under favorable light conditions.

This style of cutting was popular with the medieval lapidaries and was applied to garnet as well as other gem minerals. To carry out the above technique would involve the use of small size carborundum points, if the concavity was sunk deeply. However, a wide range of tools of this type are available, mounted on small mandrels and used in a special chuck. The polishing of the cavity is more difficult and can be best done with the many sizes of felt cones available from supply houses. Excellent examples of garnet, cassiterite, jasper, and jade have been seen cut in this style, and a number of others will doubtless suggest themselves to the gem cutter.

* * *

Some amateur lapidarists appear to have difficulty in polishing the gem mineral californite, especially on the large flat surface. There are several methods by which a good polish can be given this attractive material.

All deep scratches should first be carefully removed with a fine grit or well worn sanding cloth. A rock hard felt buff is superior for polishing over the soft felt wheels.

The Norton Alumina polishing powders are excellent for use on californite. Apply the polishing agent, mixed with water, in the usual manner. Toward the final completion of the high polish permit the felt buff to run nearly dry. This will give a high

glossy finish; a burnishing effect is accomplished by the dry buff. This same method of "burnishing" is often effective on other materials otherwise difficult to polish on a wet felt.

• • •

The amount of diamond recovered in South African mines is very small compared to the dirt removed. A recent report by the De Beers Company states that an average of only one-fourth of a carat of diamond is recovered from each "load" of dirt dug from the mine workings. A load of dirt weighs 1600 pounds.

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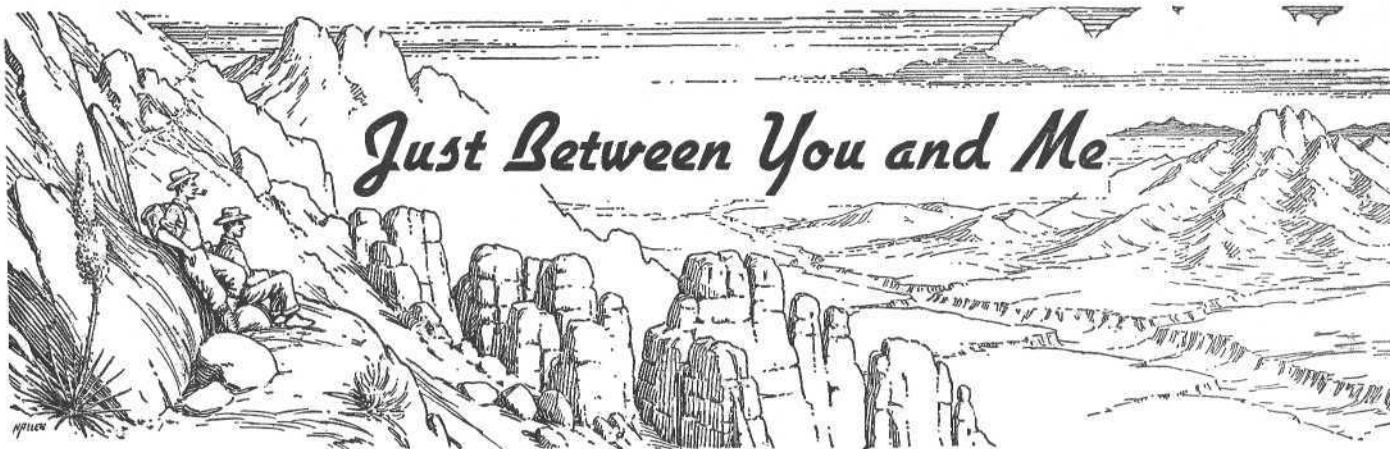
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By RANDALL HENDERSON

IN THE MOUNTAINS not far from my desert home is a camp established for delinquent boys. It isn't called a reformatory. It is known only as a ranch—the Twin Pines Ranch of Riverside County. There are no locks on the doors or bars on the windows. If the boys want to run away there is nothing to stop them—but they seldom do.

For Colonel Ralph Johnson, superintendent of the Ranch, and Mrs. Johnson, have created an environment so friendly and wholesome that it brings out the best in the boys who are sent there. After a few months as ranch hands, going to school half of each day and working with their hands the other half, the boys go through an impressive graduation ritual, and a very high percentage of them resume normal and useful places in the outside world.

The Johnsons and their staff are doing a magnificent job, reclaiming the integrity in boys who somehow got off to a bad start.

But the thought keeps recurring to me: How much better it would be if we could provide an early training or environment for those boys—for all boys—which would keep them out of trouble in the first place.

I have long felt that one of the most effective means of combating juvenile delinquency would be a revival in some form of the Civilian Conservation Corps—the CCC—of the early 'thirties.

The CCC originally was regarded as an economic palative. Today, its purpose would be educational in the broadest sense of the word, a training in those values which are acquired only by hard work, friendly but firm discipline, and close association with the world of Nature.

Probably the direction and management of outdoor camps for the boys should be in civilian rather than military hands. The army did the job the last time because there was no time to train civilians for the task. Today a training school should be established where such men as Colonel Johnson would give instruction in the fine art of bringing out the best in teen-age nature. From this school would come the leaders for the boys' camps.

In a land which becomes ever more crowded with human beings, and civilized living more complex and frustrating, it is easy to understand why an immature mind would acquire a false sense of values.

I can think of no better corrective formula for this tragic situation than a program of youth training in the great open spaces of desert and mountains where every teen-age lad would learn to study and work, without other distractions, under the direction of such leaders as Ralph Johnson—men with tender hearts and hard heads.

One of the instructors in every camp should be a

Naturalist. For I do not know of any better way to learn the basic rules that govern this God-given planet than through the eyes and understanding of a Naturalist. There is a lesson in every rock and shrub, and generally youth will be more receptive to this kind of teaching than to the lectures given at home, in the school or in the church.

* * *

One of my neighbors chided me for publishing on this page recently a protest against bringing into my home community—the Coachella Valley of California—industry which might pollute the air or contaminate the soil. "You're trying to block progress," he said.

Obviously, my friend was guilty of a common error—the error of assuming that progress has as its goal only those activities which will increase payrolls and stimulate commerce in the community. Those are worthy goals—but by no means the most important goals of progress.

Webster defines the word as "advance toward an objective," and I can think of at least three objectives which I am sure contribute more to human integrity and happiness than making money.

The first and most important goal of human endeavour in my opinion is wisdom and understanding. The second I would name is health. The third, beauty—in the broadest sense of the word. Perhaps we could learn something from the Navajo's *Homecoming Song*: "*Beauty goes before me, Beauty goes beside me, Beauty follows me, Mountains sing with me, Bluebirds sing with me, Tall pines talk with me, I see smoke coming from my hogan, My heart is good, My spirit is good, All is beauty.*"

I will agree, the Navajo has not attained much in worldly goods. But perhaps, living in his humble hogan with a dirt floor, he has found something that more payrolls and commerce have failed to bring to many of us.

* * *

This morning Cyria is whisking around the house with duster and vacuum, removing the layer of fine dust which filtered in during one of our periodic sandstorms. No one has yet invented a dust-proof house.

For two days the air was so full of fine silt and sand we could hardly see a block down the street. Then overnight the storm passed on, and this morning the air is so crystal-clear we can almost count the trees silhouetted against the snow on Mt. San Jacinto 40 miles away. The desert can be very ugly at times—but when it turns on its charm it is irresistible—at least to those who have learned to look through and beyond the thorns of the cactus to the beauty of its blossom.

BOOKS of the SOUTHWEST

MADGE HARDIN WALTERS AUTOBIOGRAPHY PUBLISHED

The life and times of a career woman pioneer, Madge Hardin Walters, is told in the autobiography, *Early Days and Indian Ways*, which takes the reader from the tranquility of a girlhood Wisconsin farm home to the beauty of Navajoland and the campgrounds of the Plains Indians.

Madge Walters is a remarkable person whose zest for the open road and esteem for the Indian ways make up the main themes of her life. She was once one of the largest dealers in Navajo rugs, one of the first to realize their value as truly distinctive American tapestries. Her reputation for fairness in dealing with the Indian won for her the respect of both White customers and Indian craftsmen. Her contribution to the preservation of Indian artifacts is also noteworthy.

The reader will find genuine admiration for this woman who faced a score of severe problems in her life head on, and always emerged the victor.

Published by Westernlore Press, Los Angeles, California; photographs; 254 pages with concluding paragraph by the author's daughter, Sidney Jamison; \$4.75.

• • •

SAGA OF THE COLORFUL PONY EXPRESS TOLD

The Pony Express from St. Joseph, Missouri, to Sacramento, California, operated for only 18 months and yet few, if any, institutions in our history can match it for color and drama. America, in the years just prior to the Civil War, is embodied in the saga of the Pony Express.

This line linked the disturbed, divided East with the rough and lusty West. On every level of its operation, from the company heads down to the section bosses, station keepers and especially the drivers, the Express demanded one virtue in its men above all others: courage.

Raymond W. and Mary Lund Settle tell of these men and their deeds in *Saddles and Spurs*. The Settles, who have written many short stories, serials, articles and books on Western history, have gathered a remarkable amount of detail in this book, and students of history will find it a valuable source of information.

Published by the Stackpole Company of Harrisburg, Pennsylvania; 217 pp. Bibliography; photographs, many published for the first time; \$3.75.

TALES OF OLD YAVAPAI COLLECTED IN NEW BOOK

If you long for an undiluted taste of pioneer days, read *Echoes of the Past*, tales of the Old Yavapai country of Arizona that were collected and published by the Yavapai Cow Belles.

Despite the book's limited setting and the unpolished writing of some of its contributors, the reader will gain a genuine insight into the kind of people who venture into a raw land and somehow find a livelihood there. Here are the stories of pioneers in the many phases of their existence, of the grocer who gave credit to the cowman on the shake of a hand; of the first woman to homestead in the county—a bride at 14 and dead at 32; a young school teacher on her first assignment — a rough mining outpost where a man of letters tended bar; a doctor who answered every call sent to him and who often arrived at his patients' bedsides more exhausted and ill from his hurried trip over rough country than they were; the cowboy who drove herd into Utah and was repaid with a few cows that gave him his start as a "cowman"; of men and women bound to the soil by a deep reverence for it and a sympathetic kinship with the animals they tended.

The reader will have the refreshing experience of reading local history written by those who made it, rather than by professional writers capable of doing everything for a story such as this except giving it life. Columnist Bert Fireman of the *Phoenix Gazette* sums it all up by saying *Echoes* "rings as clear and inviting as the dinner gong at a ranchhouse."

Editor and chief contributor is Leahra Cooper Morgan of the Cooper-Morgan Ranch at Prescott.

Published by the Yavapai Cowbelles of Arizona as Volume I; 22 historical sketches with illustrations; 160 pages; \$3.00.

Books reviewed on this page are available at Desert Crafts Shop, Palm Desert. Add three percent sales tax on orders to be sent to California.



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LATEST SCIENTIFIC DATA ON AMPHIBIANS, REPTILES

Man's knowledge of the ways of amphibians and reptiles is scant, indeed, when compared to his knowledge of other forms of life on earth—and much of this knowledge is masked by superstition.

Most of what man does know, however, is contained in a book by James A. Oliver, curator of reptiles of the New York Zoological Society and herpetologist in charge of the reptile house at the Bronx Zoo, entitled *The National History of North American Amphibians and Reptiles*.

Oliver first traces and debunks the folktales concerning reptiles and amphibians and then provides scientific substitutes in the form of the latest information available. The layman will have no difficulty in fully understanding each discussion.

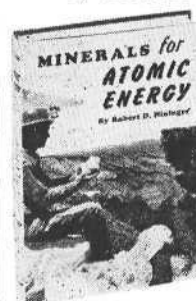
The last chapter of the book, "Amphibians and Reptiles as Pets" will prove valuable to those interested in providing the best care possible for such captives.

D. Van Nostrand Co., Inc., Princeton, New Jersey, publishers; illustrations and drawing from life at the Bronx Zoo by staff artist Lloyd Sandford; Index, glossary and references; 359 pages; \$6.95.

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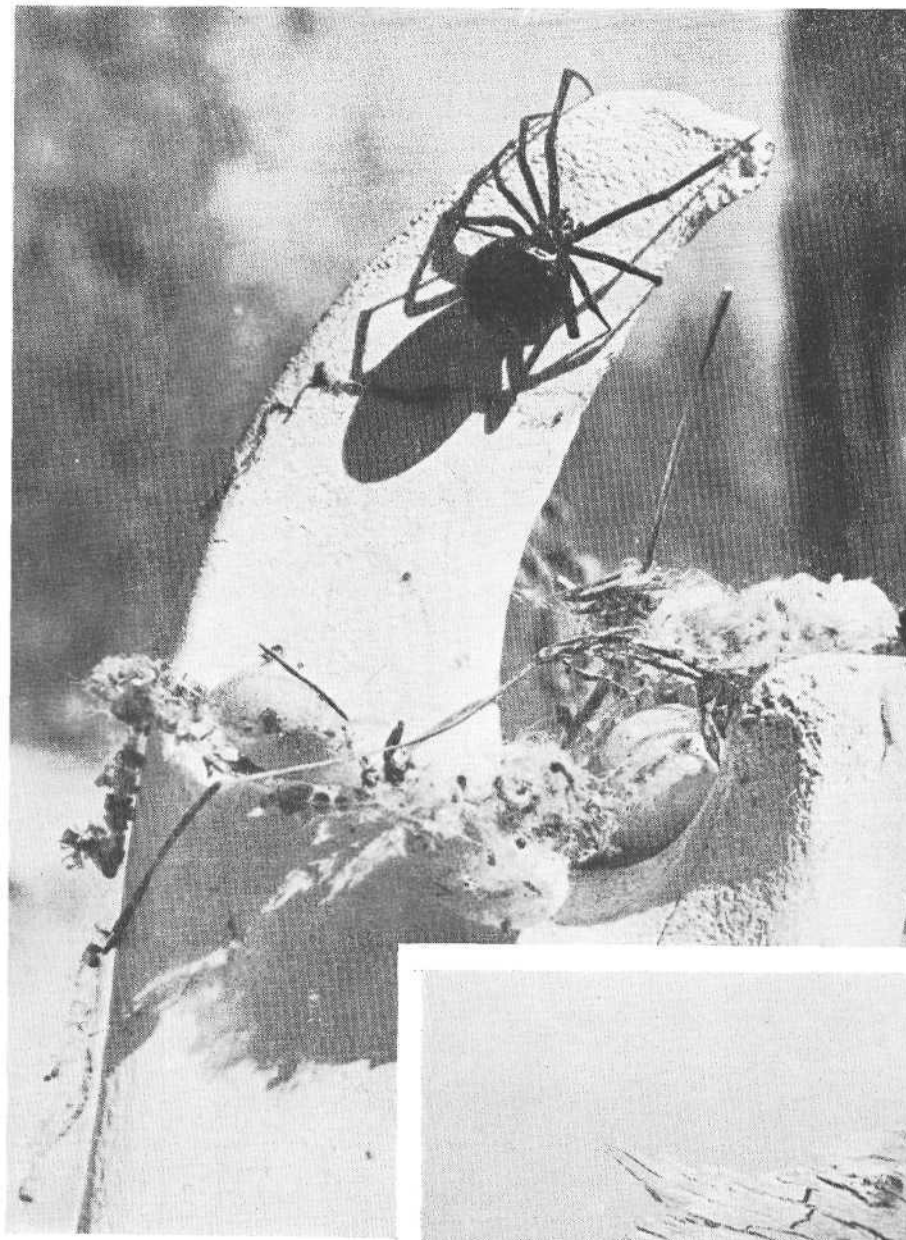
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PICTURES OF THE MONTH

Black Widow Spider

The whitened remnant of a long-dead desert animal is a fitting background for the sinister black widow spider, this month's first prize winner. The photograph of insect and bone was taken by L. D. Schooler of Blythe, California. He used a Rolleicord camera, Plus 3 Portra lens, plus X film, f. 22 at 1/100 second.



Wood and Sand

Don B. Cathcart of San Bernardino, California, wins second prize with this stark study of a twisted piece of wood in a Death Valley Sand dune. Camera data: 3½x4¼ Speed Graphic, K-2 filter, Super Pan Press Film, f. 22 at 1/50 second.

